Copy

OCCUPATIONAL HAZARDS

JULY, 1950

See page 18

IN THIS ISSUE:

INDUSTRIAL EXHAUST SYSTEMS
HOW TO MAINTAIN FIRE EXTINGUISHERS
PLANT DISPENSARY ORGANIZATION

Are you buying Pieces of equipment . . .

OR A Complete OPERATING DUST CONTROL SYSTEM?

● If you've ever attempted to "roll-your-own" dust control system you recognize the baffled expressions above. Problems such as: what air cleaning devices shall we use . . . how much air will we need . . . how much power is required . . . how shall hoods be designed, are but a few of the many problems encountered in building and installing a dust control system.

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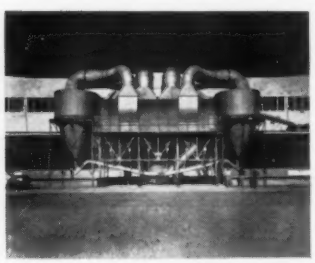
Cincinnati 25, Ohio

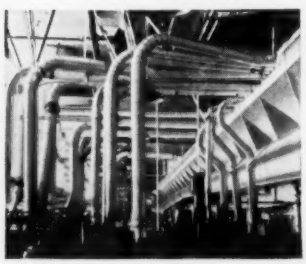
Dust control system showing grinding hoods at Crescent Tool Co., Jamestown, N. Y.

Fume Exhaust System in plating room at S. E. Overton Co., South Haven, Mich.

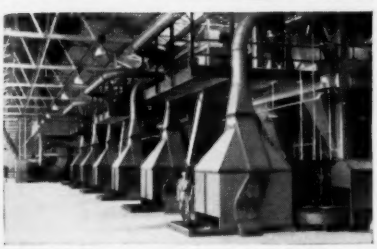
Down Draft Dust Control System for Grinding and Snagging in machine tool shop.



Dust Control System installed in large woodworking plant.



Plenum Type Dust Control System for production woodworking plant.



Dust and Fume Control in modern foundry of famous implement manufacturer.

Not For One Reason But For Many !

Suppose you asked the Purchasing Directors, or the Medical and Safety Directors, of the largest companies in America, why they continue to specify Pax Heavy Duty year after year. They would probably tell you because of its superb quality, or because they think it is the finest skin cleanser to be bought, or simply "because it's Pax," which would be reason enough.

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Do they specify Pax Heavy Duty for performance?

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Do they specify Pax Heavy Duty for economy?

Yes, that has a lot to do with it! They know from experience. They've used other products and found that Pax Heavy Duty goes much farther than most other skin cleansers.

Do they specify Pax Heavy Duty for . . . ?

Any question can be answered "Yes!" For into this product is combined every advantage that years of experience and "know-how" has taught Pax Laboratory Technologists are desirable and practical. The word "Pax" stands for all of this.

If you are not now one of the countless Pax enthusiasts, these are a few of the many reasons why *you* too will find it advantageous to recommend or buy it. At your first opportunity try Pax Heavy Duty. Its acknowledged excellence will be a revelation to you.

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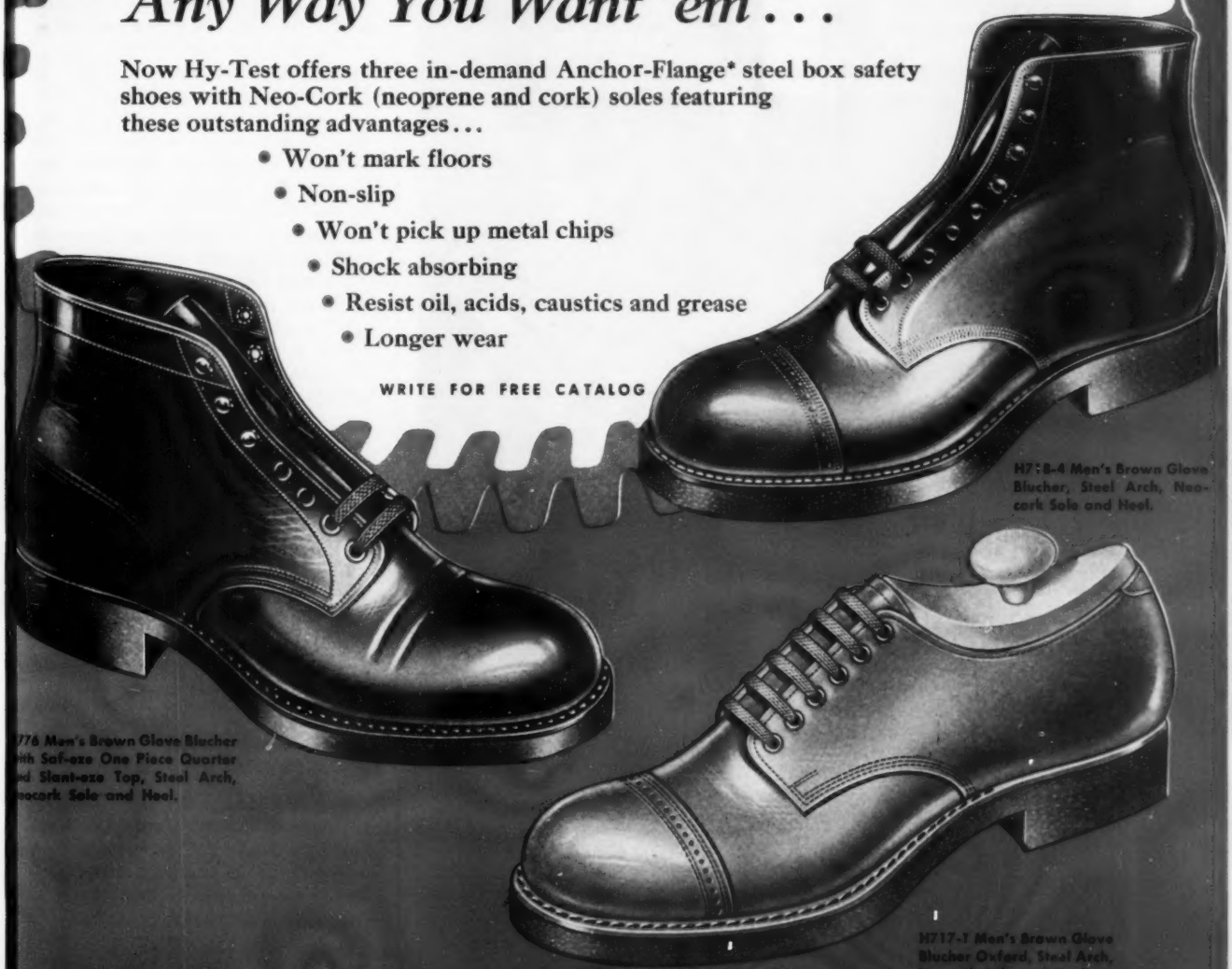

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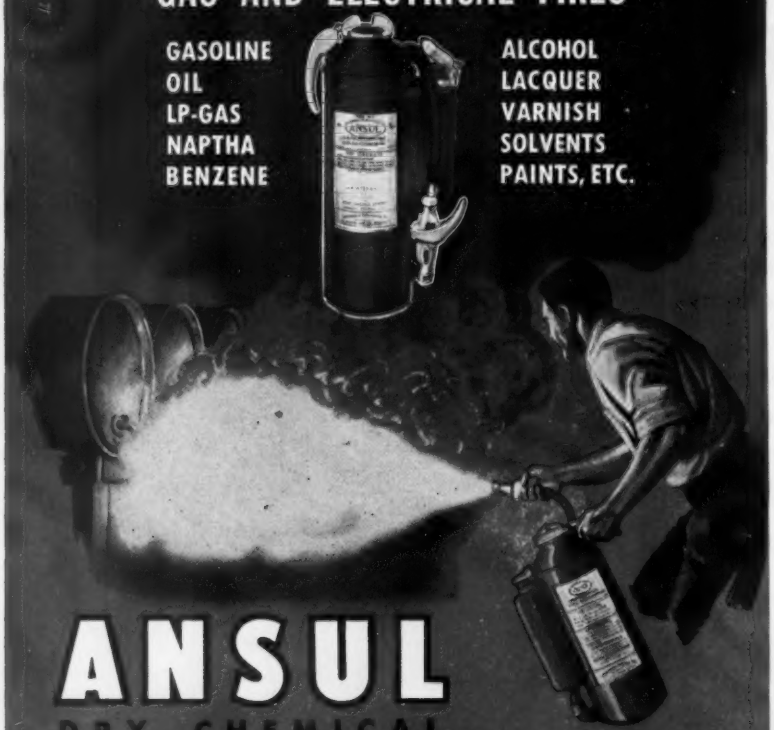

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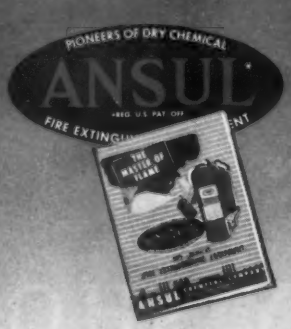
Send for File No. 506. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.



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LETTERS TO THE EDITOR

Firing Accident-Prones

Editor,

The reading of Occupational Hazards every month furnishes me with useful information which ordinarily would not come to my attention. I faintly recall reading in Right Off The Docket a case regarding displinary action (discharge) taken against an accident-prone operator. I do not recall in which state this case was heard: the decision was rendered to the effect that an employer has the right to discharge an employee building up a poor safety record.

I would appreciate it if you would endeavor to locate in your files the case in question, and also to advise me as to the latest trend in cases of this nature before the Illinois Industrial Commission.

A. N. Henrich
Safety Supervisor
Equipment Steel Products Div.
Union Asbestos & Rubber Co.
Blue Island, Illinois

•*Attorney Joel Krupman, Docket Editor, tells us that reader Henrich must have seen the case mentioned somewhere else. Since this matter is not one involving compensation for injury, it does not come under the grouping of docket cases.*

Revere Safety Test

Editor,

I've just read your May issue and, as always, I learn something from each publication. The articles on pages 13, 19, 22 and 30 were of particular interest to me. The article on page 30 (Cartoon Safety Test) is the reason for this letter.

Can you furnish the complete address of Revere Copper and Brass? As you've probably guessed, I'd like to have a copy of their safety test to be used as a guide in devising a similar test.

C. B. Newton
Perrin Air Force Base
Texas

•*Reader Newton, and others who have requested more information on the Revere cartoon test, will be interested to know that they have been second-guessed by a Chicago*

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LETTERS

continued

publisher.
Science Research Associates, Inc., 228 S. Wabash Ave., is bringing the test out in package form: it will include the test, a handbook for use with it and a manual for administrators of the program.

Degreasing Solvent

Editor,

Reference is made to the question asked by Mr. C. C. Parsons in May O. H. [page 4] in regard to a degreasing agent. We have found the following solvent effective in most operations but have been reluctant to use it on electric motors because of its low flash point (125 deg. F.) and its slow drying characteristics: dry cleaning solvent — Federal Specification PS-661—70% by volume; perchlorethylene — Federal Specification OT-326—5%; methylene chloride—AF-Navy Aeronautical Specification AN-M—37—25%.

These materials are miscible in all proportions. The mixture, although considerably less toxic than carbon tetrachloride, should not be used in closed places without adequate ventilation. To assure against corrosion, contact with water should be avoided.

D. Paul Cochran
Safety Engineer
U.S. Naval Air Station
Pensacola, Florida

Training Safety Teachers

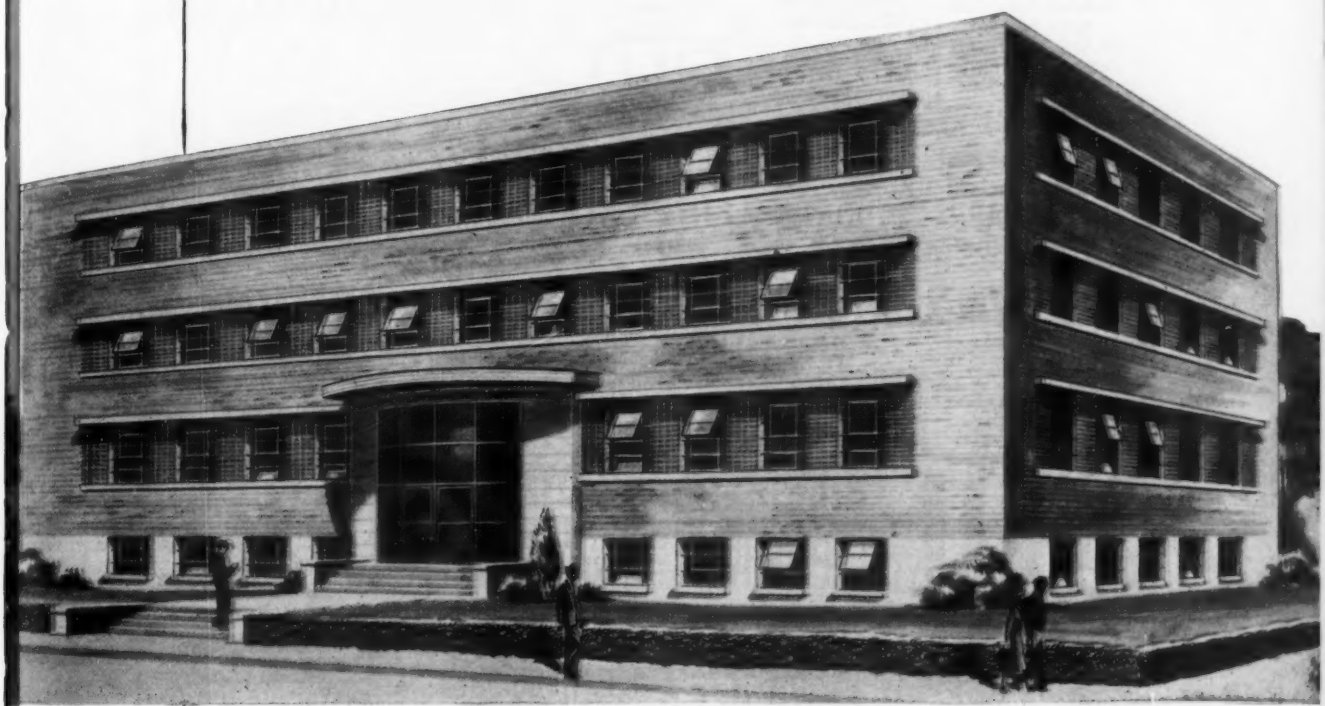
Editor,

[In reference to "How To Train Safety Teachers," O.H., May] . . . your publication reaches the men who bear the heavy responsibility for prevention of industrial accidents, and they have the best opportunity to apply this method right on the job. I have dropped all consultant work, but will be glad to give any additional suggestions that I can regarding this program to your readers without charge.

Alfred M. Cooper
P. O. Box 444
Desert Center, Calif.

• *Author Cooper is well known for his work as writer, instructor and supervisor of safety training programs. Readers who wish to take advantage of his offer may contact him direct at the above address, or care of O.H.*

dedicated to continual advancement in the protection of life, health and property *throughout industry*



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We take pride in announcing the dedication of the world's largest and most completely-equipped laboratory devoted solely to better industrial safety. This new facility reaffirms a primary objective of the founders of our company: to maintain an ever-expanding program of *original* research and development, keeping pace with the new and different hazards produced by industry's steady technological progress. The work of the John T. Ryan Memorial Laboratory assures through science that every one of the many M.S.A. safety products will deliver maximum values in protection, ease of use, and satisfaction in service.

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First-aid weapons against fire are useless if not kept in fighting condition

It's Time For Extinguisher Inspection

By C. L. JONES
Safety Engineer, Hercules Powder Co.
Wilmington, Del.

TODAY, American industry is sustaining an unprecedented annual fire loss, exceeding 150 million dollars. Keeping fire losses to a minimum is part of good business management. It requires persistent effort in preventing fires, training men and employees in fire fighting, and maintaining fire-fighting equipment in top working condition at all times. For management too deeply concerned with production to give adequate attention to plant fire safety, the penalty of neglect may be ruinous.

• Last year a fireman attacked a blaze with a fire extinguisher and the device ruptured in his hands. The cylinder of the extinguisher, weakened by corrosion or other causes, burst under the pressure developed when the device was put into operation.

• More recently a fire extinguisher located in the cabin of an airliner, suddenly, and for no apparent reason, released its charge. Investigation revealed however, that in recharging the extinguisher, attention had not been paid to manufacturer's instructions. The device, containing carbon dioxide, had been overcharged. As the heat in the cabin increased, the carbon dioxide expanded, forcing the safety-valve disc to give way. The plane was on the ground at the time.

These specific incidents emphasize the importance of taking care of fire-fighting weapons in the plant. They remind us that it is essential to regularly check fire protection devices and equipment in our own plants. They make us realize that it is not enough to have the best equipment on hand: *the equipment must be in good shape at all times.*

Essentially, fire-fighting units are weapons. They are first line defenses against an enemy that destroys property and lives as effectively and often more ruthlessly than enemies in uniform. Because they are the first line of defense, because they are used in emergencies which demand speed, efficiency and know-how, fire-fighting devices should be maintained in the best possible operating condition 365 days a year. Proper maintenance of fire extinguishers, fire hose and other fire-fighting equipment requires the same system of checking as do the other vital parts of the plant that keep industry running smoothly. Men assigned to the task of maintaining such equipment should be trained for the job.

Suggestions and information on the maintenance and care of the usual types of Underwriters' Laboratories or Factory Mutual Laboratories approved fire extinguishers are suggested here.

Soda-Acid Extinguisher

The soda-acid, or wet chemical type, fire extinguisher, available in several sizes, is designed to fight

Starting in this issue—your guide to INDUSTRIAL EXHAUST SYSTEMS
SEE PAGE 19

RECHARGE AFTER USE:

Carbon Dioxide

Inspect twice a year
Check weight
Keep filled
Examine hose

Dry Chemical

Inspect twice a year
Check weight of cartridge or pressure of cylinder
Inspect for damage
Keep filled
Make sure powder is free-running

Loaded Stream

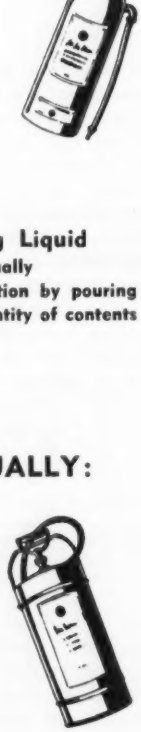
Inspect twice a year
Weigh cartridge
Check hose
Check unit for damage or corrosion

Vaporizing Liquid

Inspect annually
Check operation by pouring small quantity of contents
Keep filled

RECHARGE ANNUALLY:

Pump Type



Wash out extinguisher
Check for corrosion and damage
Check hose and pump operation
Protect from freezing unless anti-freeze solution is used

Soda-Acid, Foam

Wash all parts thoroughly with water when recharging
Check all parts, including hose
Protect from freezing
Check unit for damage or corrosion

Suggested extinguisher maintenance schedule and procedures

class A fires which originate in wood, paper, rubbish and similar combustible material. A water-based chemical, the agent has penetrating qualities which enable it to extinguish subsurface or smoldering fires. Its chemical contents are employed primarily to produce pressure for the discharge of the extinguisher contents. Since the stream discharge from the extinguisher is primarily water, it is not recommended for use on flammable liquids and is not safe for use on live electrical equipment. It is necessary to recharge the soda and acid extinguisher annually since age tends to deteriorate its chemical components.

When recharging the soda and acid fire extinguisher the ring top and acid bottle cage containing the bottle and stopper are removed. The person doing this work should be properly protected with eye-cup type goggles and rubber gloves. All interior parts of the extinguisher should be washed thoroughly and clear water should be forced through the hose and nozzle. For best operation only the chemical recharges supplied by the manufacturer of the extinguisher should be used. When reloading the extinguisher the operator should follow closely the recharging instructions on the package. The bicarbonate of soda should be dissolved in water by stirring until completely dissolved. The solution is then poured into the extinguisher and sufficient water is added to bring the solution level to the water mark located on the inside of the extinguisher.

Inspection of the shell of the fire extinguisher should be carefully made. Any extinguisher which shows excessive corrosion, either internally or externally, evidences of serious abuse, or damaged threads should not be recharged, but should be scrapped. Each nozzle and hose assembly should be examined with care. The nozzles are usually made of soft metal and a severe blow could cause complete or partial closure of the nozzle opening. The hose should be flexible and free from breaks or other defects.

Particular attention should be given to the cap and bottle assemblies. The cap threads should be clean and sharp, not worn. The cap should have a properly fitted rubber gasket which should be clean and flexible. The bottle should be inspected for cracks and the bottle holder should be examined for corrosion. When the soda-acid extinguisher is assembled, a dab of vaseline or cup grease should be spread on the threads of the cap. This step will be appreciated when the cap is removed later. The cap should be screwed on tight, making sure at least four complete threads are engaged. The date of recharging should be registered on a tag attached to the extinguisher.

Pump-Type Water Extinguishers

Another extinguisher which is frequently used for the same purpose as the soda-acid extinguisher is the pump type, also available in several sizes. The extinguishing agent used is plain water or, when of the anti-freeze type, a solution having a freezing point of 40° F. below zero—a calcium chloride base with an inhibiting agent to prevent corrosion or deposits on the extinguisher or its working parts.

(Continued on page 44)

Goodrich engineers built a device to side-step toxicity while

Disposing of Contaminated Drums

SAFETY engineers at B. F. Goodrich Company's Port Neches, Texas chemical plant, were faced with a puzzler. A highly toxic and flammable chemical, called DNCB, is used in processing, requiring extreme handling care. Following in the wake of its use was the problem of disposing of the shipping drums.

Normal Disposal Unsuitable

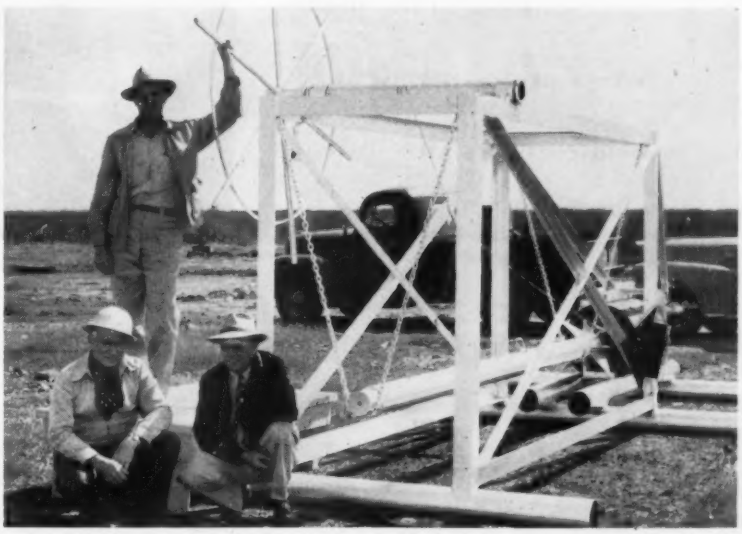
Normal methods of disposal for the one-trip containers were unsuitable: Goodrich's legal department would not permit getting rid of them in any way that might leave the company open to damage liability from fire, poisoning or dermatitis caused by outsiders handling the drums. Burning the drums seemed impractical since they would have to be punctured first, to prevent explosion, and this would expose workers to the chemical's hazards. Puncturing is a slow job anyway.

Cleaning and decontaminating the drums in the plant would have required special facilities in an isolated area—at least 450 feet from other work-areas, according to Goodrich chemists. The cost of installing a concrete apron to tie into industrial sewers; steam, water and air lines; the dangers of poisoning and dermatitis to workers; the threat of sewer contamination: all posed a real problem. Since Port Neches is only a few feet above sea level, burying the drums seemed unsafe, as it might contaminate the water table.

Solution To The Problem

Working with scrap materials, safety engineers and plant foremen developed a device to pierce the drums in a single operation so that they could be burned safely. Appropriately tagged the "drum buster," the machine has a cutting head of sheet steel with Stellite edges. The shaft of this over-sized spear is an old accumulator plunger. Twelve feet long, the unit weighs 1600 pounds. Drums are placed in a rack at the front of the machine and the spear is drawn back by a windlass attached to the side of the framework. The spearhead is released automatically when it reaches a certain point, chopping open the end of the drum.

On the first trial, 72 drums were pierced in four hours' time. They were then placed on a pile of scrap wood and burned. None of them exploded. A later inspection satisfied safety engineers that they were completely decontaminated. The process eliminates danger to operating personnel, although all drum-buster crews wear face shields, synthetic rubber gloves and split-type aprons. Likewise, the chance of contaminating tools, or exploding drums is removed.



DRUM - BUSTING experts, T. E. Chaney, (standing), E. S. Bellair and M. L. Cooper, can prepare contaminated drums for burning and disposal at a one-a-minute rate with the machine they developed from scrap materials. The windlass (left) draws the spear back, releases it automatically, sending the cutting head (arrow) through the drum's end. The drum-buster removes the dangers of toxicity in handling drums.

Mobile Fire Equipment For A Small Plant

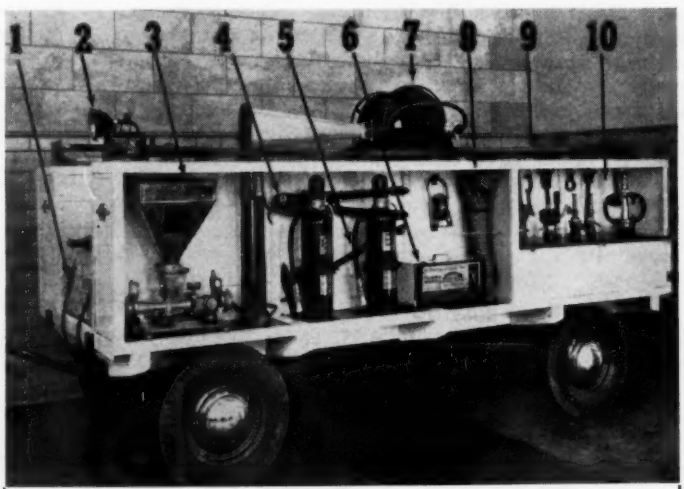
The small plant requires as large a variety of equipment as large facilities, in order to effectively combat the different types of fire threats. Often, the small plant's problem resolves into a practical method of getting the most out of fire-fighting equipment investments. Lubrizol Corporation, chemical manufacturer and processer, has developed the wagon pictured below to provide protection against forseeable emergencies with a minimum of expenditure. The mobile unit carries all needs and can easily be handled by squads of 12 to 14 men.

Fire Chief E. D. Funk designed the package, building it around the necessary equipment. The trailer was built on a standard steel frame with four pneumatic tires. It measures 13 by 6 feet. The superstructure was constructed with accessibility of equipment in mind: hitched behind a car, the trailer can be rushed to any spot in the plant area and put into action in a hurry.

A surprisingly complete arsenal of fire fighting material is carried on the wagon: 450 ft. of 2½" hose; 750 ft of 1½" hose (loaded in opposite ends); 125 ft. carbon dioxide hose reel connected by manifold to 6, 50 lb. cylinders (which lie flat beneath the 2½" hose at one end of the trailer); 650 lb. of foam powder; two 30 lb. dry powder extinguishers; a 40 ft. foam application tower; a foam generator; a set of Siamese hose connectors; a set of 1½" and 2½" fog nozzles; an asbestos suit; cable cutters; crow bar, axe, shovel, pike poles, fire rake and other small tools; electric lanterns; a selection of solid stream nozzles.

Room has been left for expansion and extras on the Lubrizol trailer. A multi-nozzle deluge system will soon be added.

Here is Lubrizol Corp.'s solution to the problem of protecting all areas despite limited investment

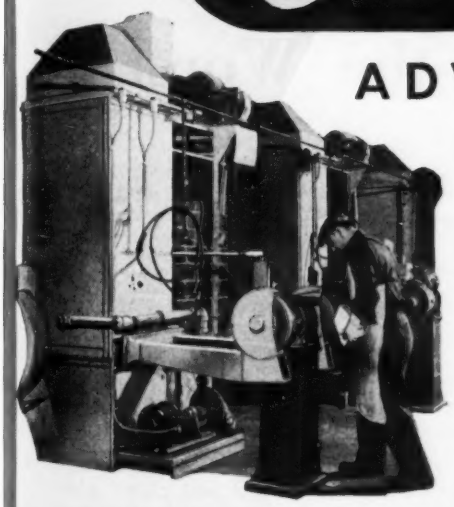


Equipment carried includes:

1 100 Ft. of 2½ inch hose
2 Portable electric lantern
3 Foam generating unit
4 Pair of heavy cable cutters
5 Two hand extinguishers
6 Asbestos fireman's suit
7 125 ft. reel of hose connected to CO_2 cylinders
8 Coil of heavy rope
9 Pikes and shovels
10 Assortment of nozzles

Rear of trailer carries 1½" hose and CO_2 cylinders. Opposite side has 40 ft. foam application tower.

Investigate

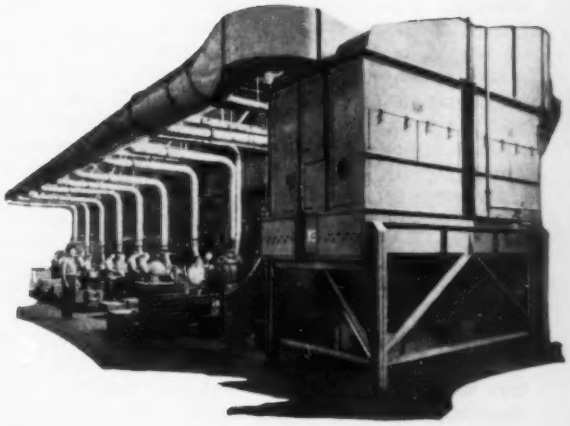


ADVANTAGES of WET-TYPE DUST COLLECTORS

Recent developments have uncovered many new uses for Wet-Type Dust Collectors. Now, more and more industries are taking advantage of the many features offered by this method. HEAT SAVINGS, FLEXIBILITY, and GREATER SAFETY are but a few of its benefits.

Consider

SUPERIOR ADVANTAGES of *Hydro Whirl!*



"Hydro-Whirl" offers these and more. Simplicity and compactness of design and rugged construction combine to provide EASIER MAINTENANCE, LONGER LIFE and GREATER EFFICIENCY.

Write, wire or phone for details on how to make your problems pay dividends in added safety and increased production.

Ask for Technical Bulletin 101.

For Finer Finishing Equipment — In Any Industry — It's

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Prepare for the Worst

. . . if you want a dispensary that affords the best treatment for all emergency cases.

By J. S. FELTON, M.D.

FACING every medical and safety department is the constant threat of a major plant disaster. Big Tom, Port Chicago, and Texas City were unheralded geographic terms before their activities were stilled by the ravages of blast and flame. Unexpected, and undreamed of, these catastrophes struck, and struck doubly hard because of the lack of immediate medical care.

The plunge into the age of atoms has presented additional concerns to the industrial planner. Do city factories disperse to rural settings? Does the manufacturing plant foresee an underground relocation with the attendant reorientation of its personnel to subterranean living? Does inter-planetary travel provide a means of disposal of highly toxic industrial wastes? What is fantastic today can be easily the reality of tomorrow so consideration must be given to a medical care program within a work setting that will provide professional assistance at time of need, be the illness or injury urgency small or great.

Whether the emergency is a sudden splashing of acid into an eye, or an explosion in a plant killing and injuring hundreds, the medical department must be equipped to offer skilled care, as well as to record the injuries seen and the treatments rendered, and to transport the wounded to hospital facilities where follow-up care can be rendered. In an effort to meet these requirements the Health Division of the Oak Ridge National Laboratory has procured the basic materials needed to handle medically the moment of disaster. The devices, furniture, and material to be described are those currently in use at the laboratory dispensary, or are those maintained in a stand-by condition. It is assumed, of course, that emergencies occur in a range, as do most things, and while certain facilities are retained in the dispensary building itself, it is possible that this structure could be razed as easily as any other, eliminating completely the available professional help. Equipment is maintained, therefore, that is portable and capable of transport to an outside point.

Basic to a system of quick response to urgent calls is cooperation between plant medical and patrol personnel. In order to effect simultaneous notification and preparation of both of these departments a special emergency telephone was installed, apart from the regular systems in use at the guard headquarters and the dispensary. The number was circularized and is

Oak Ridge lab dispensary works fast, and i prepared to move into the fie disa

MOBILE equipment stands ready (left), nter) al reach any part of laboratory area in less t tment two minutes. Ambulance carries rocker de lude po for artificial respiration, inhalator, physici at str bag and medical supplies in cabinet. **INSTA** plies fo irrigation of chemically burned eyes is poss uld mai with bottle of saline solution recessed in

always available on a placard placed next to all telephones. This special line comes into the main treatment room of the dispensary and because of its bell ring, a call immediately is distinguishable from the normal buzzer ring of the dispensary-wide telephone system. The calls are answered simultaneously at the patrol desk and by the chief nurse and the guard headquarters secures all information while the nurse listens in and determines if a nurse and/or physician is needed to accompany the ambulance. She tells the patrol desk to have the ambulance stop at the dispensary en route to the scene of trouble. As the guard headquarters is but 280 feet from the dispensary, the ambulance can be loaded readily with the necessary personnel for dispatch to the area of emergency. An ambulance can reach the most remote corner of the laboratory area within one and three-quarter minutes from the time of receipt of a call.

For unloading of the ambulance, a special platform was built onto the Dispensary which would allow quick access to the surgery. It was built at a height that would allow a smooth transfer of the loaded wheeled litter from the floor of the ambulance to the operating room. Transportation within the dispensary itself is accomplished by use of a guerny or a folding wheelchair. On arrival at the dispensary and while emergency medical care is being started, the employee's clinical record is pulled by the records clerk and furnished to the staff physician for such information as it may offer that would be of help in the handling of the current accident or injury. When time and the condition of the patient permit, a report of injury is completed. It should be noted that this is a multi-purpose form, and only the pertinent sections are completed in the event of an injury.

THE AUTHOR

Dr. Felton describes the medical facilities at Oak Ridge National Laboratory, where he is Medical Director. In addition, he is editor of Industrial Medicine & Surgery, and officer or member of 17 professional organizations.

Dispensary Equipment

Within the health division itself certain equipment is maintained for instant use in the event of serious injury. In one corner of the main treatment room, immediately above the Ritter ear, nose, and throat examination—treatment unit and chair, recessed into the wall is a three gallon jar containing sterile normal saline for irrigation of chemically burned eyes. The patient can be placed in the treatment chair, the chair tilted, and eye lavage can be started almost instantly.

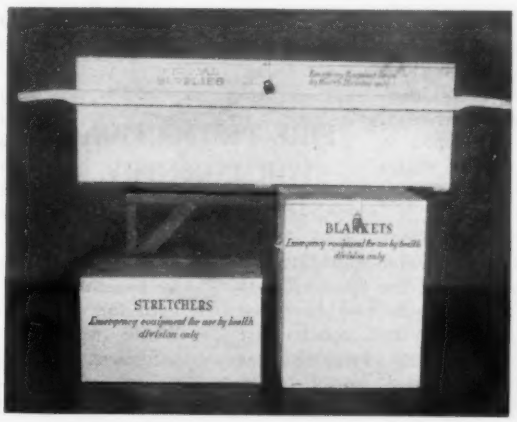
Close by in the treatment room, in a cabinet below a utility sink, is maintained a set of chemicals and medications used for decontamination of hands which have been in contact with radioactive materials, and through such contact or spillage, active materials (in quantities above allowable levels for safety) has remained on the skin of the hands. These chemicals are used as agents for the removal of contaminating materials; in addition, a lanolin-cornmeal hand cleanser scrubbing mixture is maintained in a dispenser on the wall above the sink.

For the accurate measure of the amount of hand (or shoe) contamination, a five-fold hand and foot counter is maintained which will measure and register the con-

(Continued on page 33)

disaster aid

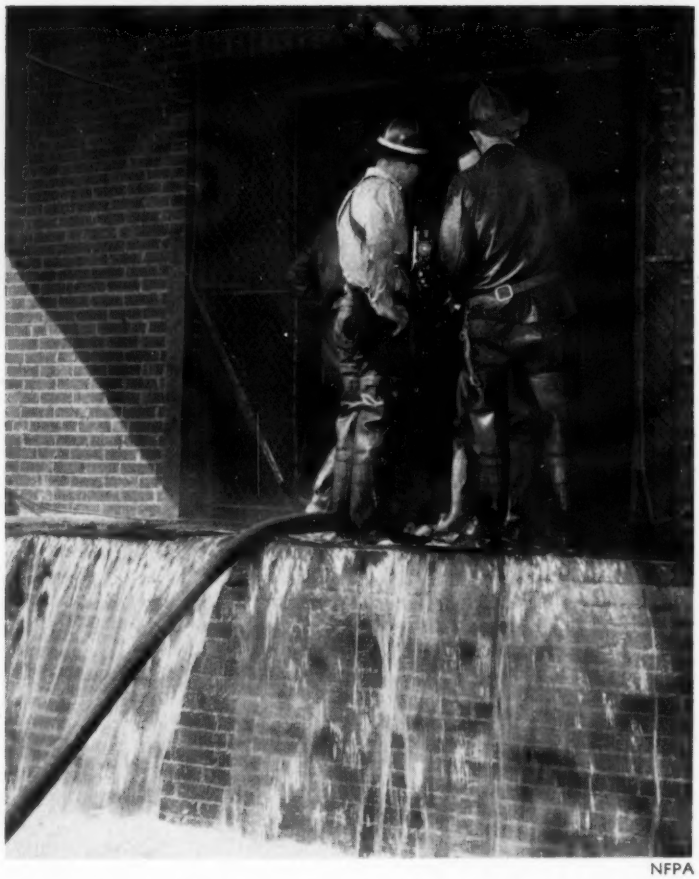
ft), nter) above Ritter eye, nose and throat ess th atment unit. **DISASTER** preparations (right) dev lude portable equipment, packed and waitysicia at strategic spots. Litters, blankets and STA plies form nucleus of a field dispensary possi uld main quarters be inaccessible.



THE COVER shows a suggested method of channeling water to prevent damage in salvage work. Absorbent compound is used to build dikes. Photo, courtesy U. S. Navy Safety Review.

When The Fire Is Out

Second of Two Parts



NFPA

WATER damage adds greatly to fire damage, should be pumped out at first opportunity.

By ANTONY J. MULLANEY
Chief Fire Marshal
Chicago Fire Dept.

THERE are four general methods of removing large quantities of water from the upper floors; by means of elevator shafts; by stairway; by holes cut from floor to floor to drain to the basement, and by chutes to the outside of the building. Before water is directed into the elevator shafts, men should be sent to the basement to cover elevator machinery or any stock exposed. They should also see that the basement drains are open and that material on the floor between the drain and shaft is skidded. When water is directed down stairways, in most cases covers should be opened to half their width and spread on the stairs with ample side elevation or roll, together with well lapped connections.

In cutting holes from floor to floor where it is impossible to use other means, consideration should be given to the lowest part of the floor. Floors easily vary in dead water level from two to three inches even in the best of ordinary or mill constructed buildings, and for that reason, holes cut at high places are of little value. A survey of the lower floors should be made so that the holes will not be cut to drain over stock, even though it is covered. A bag should be placed on each floor to catch the water and be arranged so as to drain directly into the next succeeding hole. Such work should be performed before the floor is opened where the main body of water exists.

One of the most practical means of draining water from an upper floor or floors of a building is by means of chutes constructed on the floor below the water to drain through windows or doors. Chûtes are used whenever the water level will permit draining a floor at a point close to an outside window or door.

Holes should only be cut in floors when large amounts of water are present and draining facilities are limited. When it is necessary to cut a hole, the ceiling below must be punctured, preferably from the floor below to prevent the water from spreading in the concealed space. While augers can be used in buildings having floors of comparatively light construction, they have little value in the more heavily constructed buildings.

(Continued on page 47)

What you should know about

Industrial Exhaust Systems

Practical information on dust control equipment: what it is, how it works, and how to select it for your needs.

Part 1 which follows, covers dust gathering and moving equipment: hoods, ducts and fans.

REMOVAL of dust, fumes and other air contaminants is a top-priority consideration for the health and safety of workers. The hygienic needs for such removal are broadly understood and accepted. The methods by which air can be maintained at healthy purity levels, however, are less generally familiar, due to their complexity and technical nature. This article will outline the *how* of industrial dust control; and, since general ventilation is rarely effective in this use, it will be limited to local exhaust ventilating systems.

As actual engineering and design of air-handling components must be done by specialists, formulas and much of the theory governing the construction will not be considered here: the major topics to be covered—which are of concern to safety directors—are (1) factors to be considered in selection of dust control equipment and (2) characteristics of various types of equipment available.

A. GENERAL CONSIDERATIONS

Local exhaust ventilation systems pick up contaminated air—laden with dust, vapors, fumes, etc.—at the point of origin and carry it to a place where the contaminant is either disposed of or reclaimed for further use. In certain cases where the contaminant cannot be collected, it is dispersed at a point where its release into the atmosphere will not create a safety, health, or nuisance hazard. We will discuss the elements of such systems separately—the *hoods* which pick up the air before its harmful contents can be disseminated in the plant atmosphere, the *piping* which carries it to the disposal point, the *collectors* which get rid of *refuse*, and the *fans* which provide the power necessary to move the

Exhaust systems work in three interdependent phases:

Fans provide the power for . . .

Hoods-

to collect dust,

Ducts-

to carry it out,

Collectors-

to dispose of it.

A variety of needs can be met by adapting standard styles

Overhead

LIGHTER-than-air fumes are frequently removed via overhead hooding. Back and side panels on this foundry unit increase efficiency.

Downdraft

HEAVY grinding operations, such as thos formed at Monarch Machine Tool Co. (abov be exhausted from below. Note protective s

ossdra

N work a hooding It nee

air: but it must be remembered that each component is dependent for best performance on all of the others. Unless all parts are selected with this fact in mind, the weak link in the chain of dust removal will cause the others to labor excessively and will cut down the efficiency of the entire system.

Therefore, when new installations, or modifications of existing exhaust systems are planned, care should be taken to assure an *overall* solution to existing problems. Help on this point is available from (1) state codes, which, in many cases, specify minimum requirements (2) insurance carriers, who will review plans and inspect the finished job (3) equipment manufacturers, who should stand behind the finished job, provided their products are installed in compliance with their specifications. It is desirable, in any case, to secure a single supervisory control over the entire job to make sure that all components are matched for maximum efficiency.

What Kind Of Contaminant?

The first factor to be considered in selection of equipment is the nature of the refuse which must be handled. When we discuss collectors, it will be seen that, though flexible in application, the different types are designed for best use on limited kinds and sizes of dust.

The *micron* is the standard of dust particle measurement. It is 1/25,400 of an inch. The point of a sharp needle is about 20 microns in diameter, while the average human hair measures 80 microns. Particles larger than 10 microns are visible to the naked eye, but many of the dust and fume particles which cause lung damage are only one micron in diameter, or smaller.

What else must be known about the dust? Its chemical characteristics: is it flammable or explosive? Its physical properties: is it dry, sticky or wet? Must it be handled while hot? Only after organization of these and other facts, can a system be suited to the solution of each specific problem. And let us emphasize the fact that *exhaust systems must be tailored to individual needs.*

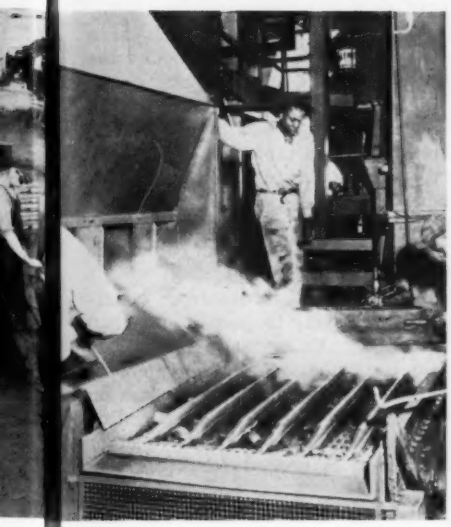
B. DIRT SOURCE EQUIPMENT

The starting point of any exhaust system is the hood, the opening at the work area into which the contaminated air is drawn or within which it is confined. Since the size, shape and location of the hood is the main determinant of air volume required to operate the system, this initial construction is of great importance. A poorly designed hood means an inefficient or expensively operated system, regardless of the care given to design and construction of the other components.

Before actual hood design is undertaken, every effort should be made to localize and minimize the dust source by modification of process and placement of production machinery. The greater the area which must be covered by the hood, the larger the air volume required, and the more expensive the entire installation will be. When the smallest possible area of contamination has been determined, the hood should be designed with the following factors in mind:

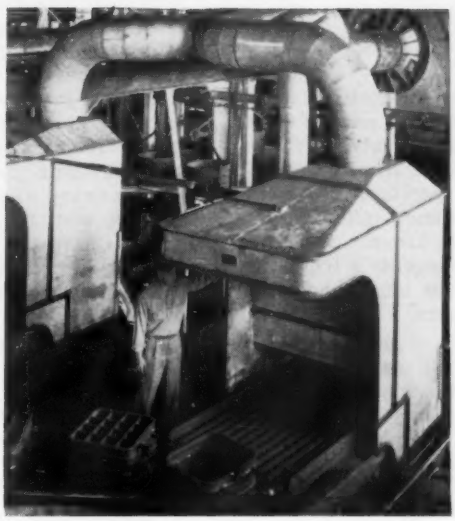
The hood should be placed as close to, and enclose as much of the dust source as is practical. Here again, a partial or complete enclosure reduces the air requirements: no other phase of hood design has as great an influence on the total cost of the system. Totally enclosed hoods are possible only in operations not requiring close attention or manual work. Typical of this application is the automatic filling of barrels or sacks—a process in which little or no labor is needed. Where constant worker attention or effort is called for, dust sources can be only partially enclosed. Maintenance and repair requirements also determine the extent of enclosure possible at the dust source. No matter how

Photos, Kirk & Blum Mfg. Co.



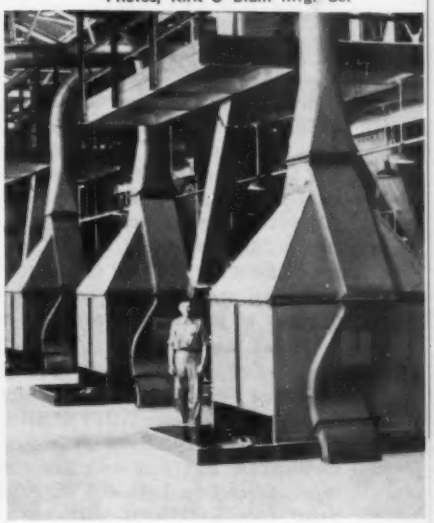
rossdraft

thos work area requirements may require cross-
(abov hooding so as not to interfere with opera-
tive s It needs more air than enclosures.



Combination

PARTIAL enclosure gives additional air economy to overhead hoods, does not obstruct work area. Side and top panels boost efficiency too.



Total Enclosure

GREATEST efficiency is from total enclosure. International Harvester Co. shake-out battery shown.

Fume removal from open tanks usually calls for one of two commonly used hooding arrangements

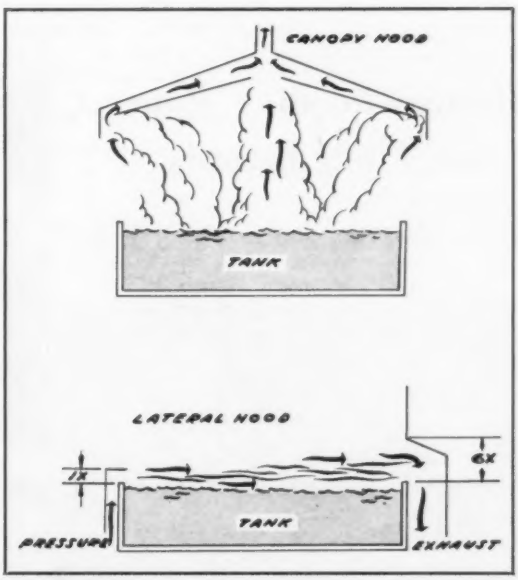
efficient a hood may be, from a dust collecting standpoint, it constitutes a safety threat if it impedes normal work at the operation it is serving. It must be planned, of course, so that the operator need never be between the dust source and the hood.

Design and place the hood so that dust and fumes are drawn directly into the mouth of the pipe with sufficient force to prevent their escape. While space prohibits coverage of the methods and formulas by which the various design factors are determined, some airflow characteristics might be mentioned.*

The manner in which dust disperses depends on the size of the particles. Larger particles may be widely thrown from the operation, but small ones (and most lung irritant particles are 10 microns and smaller) cannot hold momentum and depend on air currents to direct their movement. To effectively trap the larger particles, it is necessary that the hood be placed as a target in their line of flight from the dust producing process. A minimum air volume at the hood is one which will overcome the kinetic energy of these particles plus the local drafts and currents produced by the operation itself and those from windows, heaters, fans, etc.

Suction openings draw air equally from all directions. Flanges placed around the hood will increase its effectiveness by reducing the air flow from the regions behind it and forcing the air to flow from directly in front of the hood. Such flanges, one-third the depth

**Sources of complete engineering data will be provided on request.*



DOUBLE canopy hood (top) forms slot around edge to prevent vapors from escaping around skirt, permitting lower volume for same efficiency. Main drawback: inner hood may be condensation trap for vapors. **PUSH-PULL** action of horizontal hood (bottom) uses clean air pressure to augment exhaust pull of hood. Exhaust slot must be 6 times capacity of pressure slot.

of the hood, can reduce the air requirements by as much as 30%. Similarly, a hood lying on a flat surface (such as a large machine table) requires only about 75% of the air volume that it would in space. Hood effectiveness decreases rapidly as the entrance is moved away from the dust source: suction cannot influence the dust's flight at more than a slight distance from the hood. Because the pull of exhaust currents is limited to the small region of the hood face, the intake should be as close as practical to the dust source.

It has been found that, regardless of air velocity, the contours of air flow for a given hood shape are nearly the same for all hood sizes. Since a single pattern of contours is representative of all similarly shaped hoods, the designer will have little need for plotting precise flow lines, but can rely on standard diagrams. The tapering section between the hood mouth and the exhaust pipe has slight influence on these velocity contours—although it does affect pressure loss at the entry.

Different Types of Hoods

Due to the complexity of machines and operations which call for exhaust systems, most hoods are custom designed for individual applications; although many types are so frequently used as to be nearly standard. The main types described here are suggested as general guides, but cannot be universally applied. In most cases, adaptation or combination of several will solve particular problems.

Grinding Operations. Grinding wheels are enclosed, usually in individual hoods, each with its branch pipe leading to the main (header) duct. Construction must be such that access to the wheel for replacement is provided. Other considerations: (1) the hood enclosure should be designed so that refuse is thrown away from the wheel directly into the enclosure, (2) as a safety factor, the hood should be well fitted around the wheel; otherwise, bits of castings, etc., might become lodged between the side and the wheel itself. Horizontal grinding operations can be exhausted by downdraft hoods, either on partially enclosed tables, or—for heavy grinding—with grating-covered floor hoods. Air velocities necessary to exhaust grindings particles, which are released with great force, range between 500 and 2000 f.p.m. Clean-out traps should be provided below the intake or in the branch pipe.

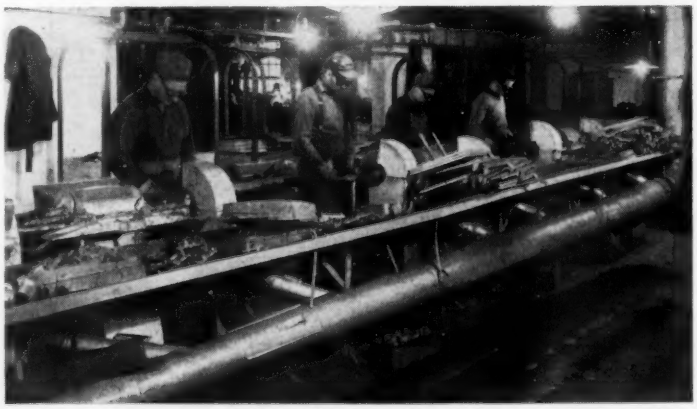
Woodworking Machinery. Most refuse from woodworking processes is of a relatively large size and must be handled in large quantities. Consequently, emphasis in design should be on conformation to the trajectory of the flying particles and to enclosure, rather than on external velocities. Heavy duty construction are called for, due to the hard usage which these hoods receive: steel of 16 gage, or heavier, is needed for doors and telescoping members.

Top Hoods. Lighter-than-air gases and fumes are exhausted through top—or canopy—hoods. The lower the canopy, the more effective it will be in controlling fumes, but a minimum height of about six and a half feet is practical when men must work under it. As this type of hood is quite susceptible to drafts, side curtains are often required to partially enclose the fume source and limit the area served by the fan. Such an enclosure will cut base velocity requirements from 250 f.p.m. (for an open canopy) to 150 f.p.m. *Double hoods* are

(Continued on page 40)

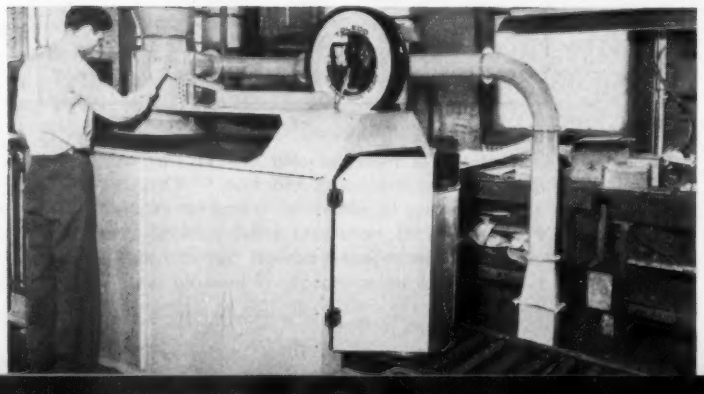
Part 2 **which will appear in August, covers different types of collecting equipment and problems incidental to dust separation.**

Effective hooding stops many job hazards



BATTERY of light grinding wheels are exhausted to main pipe (running length of bench) through individual branches. Note clean-outs in duct, use of protective glasses by operators.

Photo, American Wheelabrator and Equip. Corp.



COMPLETE enclosure of barrel filling operation protects Proctor & Gamble worker from dust. Barrels are conveyor-fed from the left: window permits operator to control filling without exposure. Total enclosures are possible only when processes are automatic, need little maintenance.

SAFETY PROGRAM CLOSE-UP

Strengthening old lines to contact workers and building new ones is the basis of Baltimore & Ohio R.R. teaching that

Safety Is Everybody's Job

BALTIMORE and Ohio Railroad's steadily falling injury rate stood at 4.98 in January of this year, an improvement of 60% over 1948 and the best safety increase among the nation's large roads. Underlying this unusual improvement is a degree of top management backing and participation rarely found in industry: president R. B. White is the B & O's safety program's major inventor and leading proponent.

► *The B & O approach hammers at improved methods of communication. Protective measures and equipment, yes—but the starting point of safe production is the awareness in the mind of each worker. New ways are being developed to reach each man individually and impress him with his interest in safety.*

Fifty thousand employees take part in the program, implementing the company's slogan, "Safety Is Everybody's Job." Some of the methods used are sharpened versions of well-known propaganda techniques: other apply tools which are relatively new. All of them can be put to work in other industries.

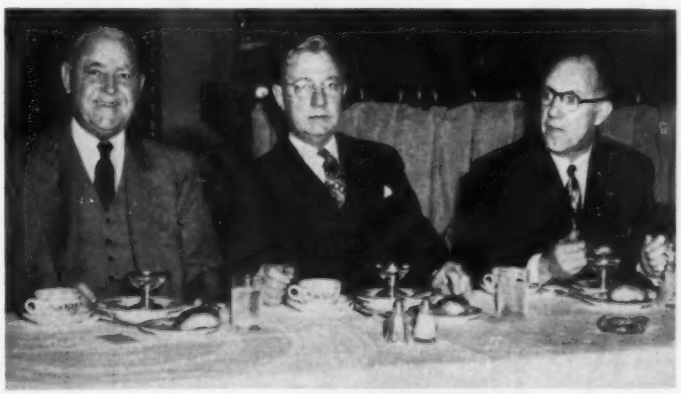
Step 1: Direct Contact

A leveling-off in casualties since 1931 seemed to flaunt further improvement; but this fairly stable accident rate (about 7.0) has been dropping constantly under pressure from the new "communications" program.

The kick-off was a personal letter to each of B & O's employees. In it, Mr. White pointed out the company's concern for the safety of each man, enlisted his aid in protecting his own welfare. An executive safety committee, headed by Mr. White, was established, consisting of vice presidents and department heads. These initial steps served notice that safety was to be an integral part of B & O operation, and that it was the personal concern of every employee—from top brass down the line.

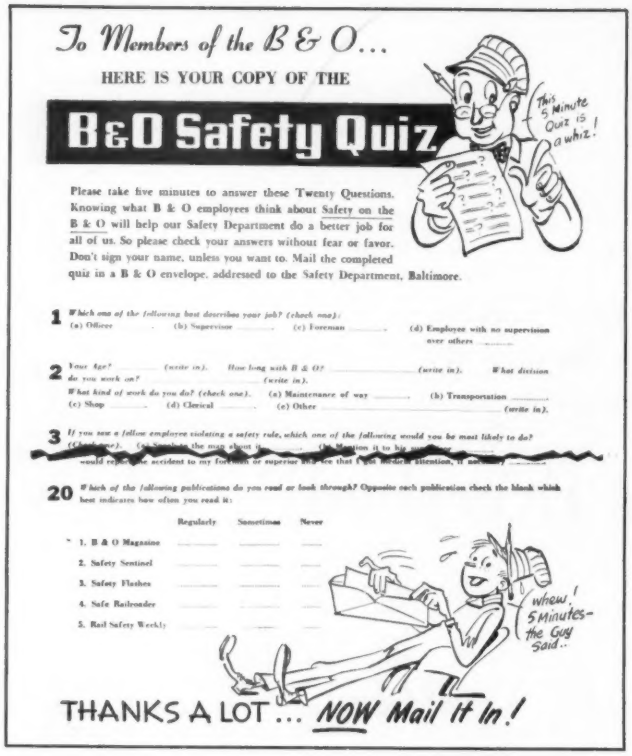
Step 2: Safety Quiz

One of the first projects was a questionnaire on safety sent to all employees. It was designed to do two things: (a) obtain information about present safety habits and attitudes of employees (b) make employees more conscious of safety and of management's interest

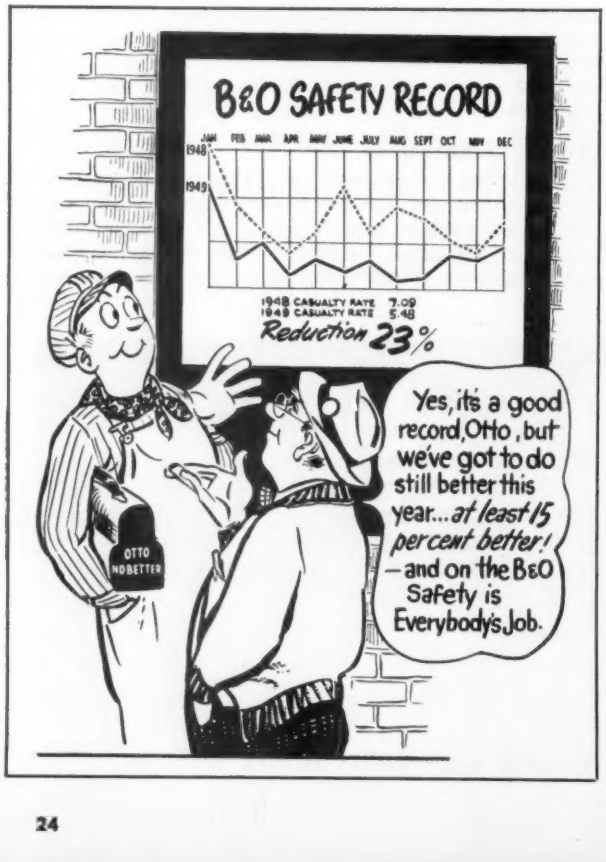


PRESIDENT R. B. White (left) is the leading safety enthusiast and the sparkplug of B & O's very successful program. He is pictured attending a recent executive safety meeting, accompanied by W. C. Baker, vice president in charge of operation, and G. W. Elste, safety dept. head.

How B & O management gave—and got—safety information ►


To Members of the B & O...
HERE IS YOUR COPY OF THE
B&O Safety Quiz
This 5 Minute Quiz is a whiz!
Please take five minutes to answer these Twenty Questions. Knowing what B & O employees think about Safety on the B & O will help our Safety Department do a better job for all of us. So please check your answers without fear or favor. Don't sign your name, unless you want to. Mail the completed quiz in a B & O envelope, addressed to the Safety Department, Baltimore.
1 Which one of the following best describes your job? (check one):
(a) Officer (b) Supervisor (c) Foreman (d) Employee with no supervision over others
2 Your Age? (write in). How long with B & O? (write in). What division do you work on? (write in).
What kind of work do you do? (check one). (a) Maintenance of way (b) Transportation (c) Shop (d) Clerical (e) Other (write in).
3 If you saw a fellow employee violating a safety rule, which one of the following would you be most likely to do?
20 Which of the following publications do you read or look through? Opposite each publication check the block which best indicates how often you read it:
Regularly Sometimes Never
1. B & O Magazine
2. Safety Sentinel
3. Safety Flashes
4. Safe Railroader
5. Rail Safety Week)
whew! 5 Minutes- the Guy said..
THANKS A LOT... NOW Mail It In!

Answers to this quiz helped build a new safety record


B&O SAFETY RECORD
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1948
1949
1948 CASUALTY RATE 7.09
1949 CASUALTY RATE 5.48
Reduction 23%
Yes, it's a good record, Otto, but we've got to do still better this year... at least 15 percent better! —and on the B&O Safety is Everybody's Job.
OTTO NOBETTER

in reducing personal injuries. This use of a poll—that is primarily to give, rather than get, information—is a new technique in the field of communications.

• One of the questions, for example, asked: "Which of these statements is most true? (a) Accidents are bound to happen, (b) Accidents can be prevented"? In answering the question, the employee was forced to think about a fundamental concept of safety.

• Another question designed to give, as well as obtain, information was "Is safety mainly the responsibility of management, the individual worker, the foreman on the job, or management and employees working together?"

• And another provocative one said, "To make things easier for yourself, do you sometimes find yourself taking chances on the job?"

There were questions that measured the safety habits of workers. Do they wear safety shoes? What do they think about safety meetings? How often do their supervisors talk to them about safety? To what extent do they read safety literature. Other questions checked employee attitudes about effectiveness of the B & O safety program, the value and quality of safety meetings, and whether they thought safety rules were strict enough.

Eight thousand employees voluntarily took time to complete the quiz and mail it in. Results were analyzed and a report went to all top supervisors throughout the system.

One of the most interesting findings of the quiz was that employees were already extremely safety conscious. For example, more than nine out of ten said they would speak to a fellow employee whom they saw violating a safety rule. *The fact that many of them probably would not do as they say is not as significant as the fact that almost all of them realize what they should do.* An even bigger majority of employees are aware that it is their responsibility to report an accident and to get medical attention, if necessary, before leaving the property.

The findings of this questionnaire have helped shape the expanded safety program. For example, safety rules are being rewritten to make them more complete and clear. Safety meetings are being made more interesting. Supervisors talk to their men individually more often. The whole subject of more strict safety rule enforcement and of disciplinary action is currently being reviewed.

The most important disclosure of the quiz was that employees want increased attention to the safety problem.

Step 3: Constant Reminders

Various media are being used to maintain safety communications directly to workers. One of these, The Safety Sentinel, is a 4-page leaflet distributed monthly to employees on the job. It has an exclusively emotional appeal, a minimum of writing, and shows the unsafe

(Continued on page 25)

OTTO NOBETTER (left) appears in the B & O's monthly Safety Sentinel. A slow learner, Otto's mishaps serve as lessons to the road's 50,000 employees. The usual printed media are only a part of the safety program which is built around developing effective means to communicate ideas to all workers.

ways of a cartoon character Otto Nobetter.

A device aimed at special groups of employees was a pay envelope stuffer, which took the form of a check written on "The Bank of Happiness" to "Myself and Family" for "a long useful life and no injuries." It was signed "The Man Who Does His Work Safely". A summary of safety rules for various classes of employees was printed on the back of the check.

One topic emphasized was the matter of getting more employees to buy safety shoes. It has shown up in the questionnaire that none of the men already having shoes thought that accidents were bound to happen. It seems that when a man buys a pair of safety shoes, he is also buying the whole concept of safety. Several of the printed media focused on this subject. Also, manufacturers of the shoes increased their sales efforts. They sold them by the hundreds.

One of the most recent projects paid off handsomely. The City of New York had used the same principle to combat the water shortage when it declared one day of the week as "waterless" or "dry" day. The theory was that by using little water on one day, people would form the habit and continue to use less all week.

When the B & O declared last February to be "No Accident Month" they were in effect doing the same thing. By making an extra effort, employees might avoid accidents for one month and also acquire good safety habits that would hold throughout the year. A special No Accident Month poster was widely displayed. The Sentinel for that month urged all employees to participate. Regular safety talks as well as wire recordings by the President and general managers also carried the message. Not only was the accident rate for "No Accident Month" an improvement over the previous year—but it was the safest month in B & O history. The rate dropped to 3.51.

Results: 23% Casualty Drop

What actually has been achieved by the B & O's increased emphasis on safety?

For the year 1949 their accident rate per million man hours was 5.48. This represents a decrease of 23% under 1948, the safest previous year. And it compares with an average reduction for the six largest railroads of 14%. No railroad working as many man hours as the B & O had a comparable safety record.

4 Ways To Win Worker Support

GETTING workers to use the safety equipment that management spends millions each year developing and procuring has always been the most persistent worm in a safety director's apple barrel.

Building employee cooperation in safety programs is a tough supervisory job: it takes the diplomacy of an ambassador, the firmness of a traffic cop. Disregard of regulations is often a deep-seated attitude. The lathe hand who balks at wearing safety goggles probably drove his school-teachers wild, too. By the time he gets to you, he has a fine disregard for regulations that is hard to shake. Here are four pointers that have worked in other plants. Perhaps your methods should include them:

1 Have as Few Rules as Possible

Keep your list of safety rules as short as you can, but see that the ones you do have are observed. Don't let your men confuse it's brevity with its importance.

When a regulation no longer makes sense, junk it. Don't keep a rule on the books simply because its always been there.

Let your supervisors in on the job of setting up a list of workable rules: their closer contacts with job hazards will make them invaluable.

2 Speak to Offenders Privately

Respect a man's dignity—never dress him down in front of other employees. Humiliating him before a crowd of gawking onlookers turns a serious job into a sideshow, makes the offender resentful, anxious to get even. Have the worker come to your desk—or at least take him away from his work area—if you have something to say to him.

Be as inconspicuous as possible about calling men aside: don't bellow at them over the roar of shop noises.

3 Be Completely Fair Always

Favoritism is fatal—steer clear of it whatever you do. Treat all workers alike. Consistent fairness in your supervision is one sure way of gaining worker confidence and cooperation. When you discipline a worker, let him know that he is getting exactly the same treatment anyone else would receive under similar circumstances.

Do everything possible to get at the root of each problem: try to find out why the man does what he does.

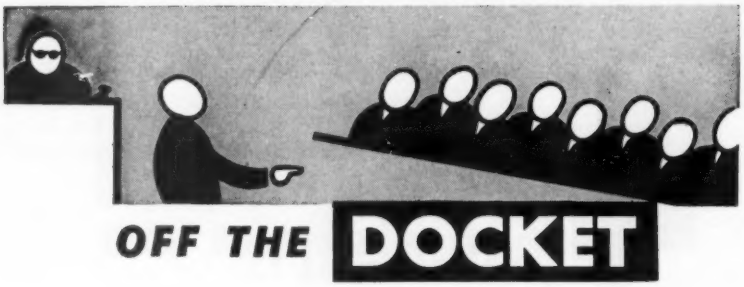
Make sure the employee knows which rule he broke—find out whether he knew about it when he broke it. If he doesn't know the rule, set him straight and see that everyone else who should know about it is properly informed.

4 Crack Down When You Have To

See to it that everyone knows where you stand on safety regulation infractions, what you intend to do about them. Don't be vague. Let workers know how you feel about constant offenders. Be consistent: stick to your guns.

Investigate each offense carefully. Double check your information to avoid having to change your decision when overlooked evidence is dug up. If something in favor of the man you've punished turns up, however, don't hesitate to set things straight.

If the offender has been warned before, do what you warned him you'd do: warnings are effective only when people know they'll be carried through.



Killed In Dice Game Argument

WILLIAMS was employed to keep the concrete used in the construction which it then had under way, wetted down. On the morning of October 23, 1947, with other employees, he was brought to the employer's premises in one of its trucks in accordance with its plan of having the employees on hand ready to go to work when needed. Before there was any need for Williams' work, he, with other employees, was taking part in a game of dice which was in progress in employer's premises near the main office. Williams and one Thornton, another employee, made a side-bet on the outcome of the throwing of the dice, the details of which are not important further than to say that when trouble arose out of the betting transaction Thornton struck Williams on the forehead with a 2 x 6. He died either as a direct result of the blow, or from striking the back of his head on an elevated piece of concrete lying near the dice table from which he fell when struck.

Both employees were on the employer's premises, brought there so they would be on hand to take up their work as soon as called upon. The work of neither had begun at the time Thornton struck Williams. No connection in behalf of the company with the unlawful practice of which Williams and Thornton were participating was presented. The company did not originate the practice of shooting dice on its premises or adopt it as any part of its work plan, or make it a part of either the work or recreation of its employees to serve its purpose in any way.

Inasmuch as there was nothing in the side-bet of the two employees connected with the employer's business, the claim is non-compensable, and the insurer is not liable. *The risk must be incidental to the employment.* There is no causal connection between the conditions under which the employee worked. He was doing nothing at the time he was requested to do which resulted in injury to him. Claim disallowed.

American General Ins., Company vs. Williams, Supreme Ct. of Texas, Feb. 15, 1950. (227 SW_2 788)

Aggravation of Pre-Existing Allergy

KILLIAN'S work consisted of molding aluminum automobile pistons, and was done at a machine within six feet of a furnace, on each side of which was a pot for molten aluminum.

He claims that on August 16, 1946, he became unusually warm and very weak, but he went ahead and finished his work after a short rest. He told the foreman of this incident and did not work for several days thereafter. He claims a recurrence of these symptoms on October 1, 1946. He mentioned it to his foreman, but the latter said nothing about it, nor did he send claimant to the doctor. He did not work for a long period thereafter.

A similar illness occurred in November, 1946; and Killian did not work again until June, 1947, when he again suffered a recurrence of his trouble. He was given first aid, but was not sent to a doctor. His condition was diagnosed as a respiratory infection, allergic in origin, and due to the inhalation of dust, which the doctor stated could be aggravated by heat. None of the medical testimony indicated definitely that claimant's allergy was in fact aggravated by heat.

The medical record indicates that the claimant on November 29, 1946, did complain of a postnasal discharge and nasal obstruction for the last two and one-half years. A specialist indicated that exposure to heat on the days referred to above could have affected an allergy, and either heat or cold has the tendency of flaring up an allergy attack.

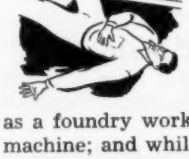
The question arises as to whether or not the circumstances aggravating a pre-existing allergy condition as the result of heat and dust inhaled at place of employment under conditions normally prevailing amounted to a compensable accident. There was nothing in the record to indicate that the heat created by the furnace was any greater than usual on the days in question. In fact, claimant himself testified that the heat cast off by the furnace was the same day after day. Although medical testimony indicated that the heat could cause an aggravation of the allergy which produced the illness; no doctor testified that it definitely aggravated or produced the result in claimant's nose, or that the heat from the furnace caused any objective symptoms of injury — a necessary element of accident according to the law's definition.

There was nothing abnormal or unforeseen in the conditions of employment existing which arose more or less suddenly which could be pointed out as a definite positive factor of the injury. The claimant was not exposed because of his employment to a greater degree than were other members of the community; and, therefore, his claim was not compensable under the compensation law.

Killian vs. Sterling Aluminum Products Company, St. Louis Ct. of Appeals, Missouri. February 21, 1950. (227 SW_2 526)

Death Presumed Due To Accident

THE WIDOW of the decedent makes claim for a recovery under the workmen's compensation act, contending that death of her husband was caused by an accident arising out of and in the course of employment. The decedent was 26 years old, a steady and dependable worker. He was employed as a foundry worker on a moulding machine; and while so doing on December 6th, 1945, suddenly fell to the floor dead or dying. None of the 26 employees doing the same type of work observed him to be ill prior to his death.



The machines were so arranged that the moulders were approximately from 12 to 40 inches apart. The

operator, after making every fourth or fifth mould, sprayed the pattern with a mixture of oil, paraffin wax and stearic acid, causing wax to adhere to the pattern. A spray gun was used. None of the other employees noticed any unusual odors and the spray had the usual coal oil smell. Everybody used the same mixture. The cause of death was determined to be inhalation of a chlorinated hydro-carbon. Examination was made by the claimant's physician who contended that he found tetrachlorethylene, and that, in his opinion, death was caused by ingestion rather than inhalation.

Dr. McNally, a recognized toxicologist and physician made an examination of Finerson's organs and blood. He stated definitely that decedent did not die of tetrachlorethylene poisoning. His findings indicated that he "either had a drink shortly before death or, if he had no access to alcohol at work, he had had considerable when he came to work that morning". Tetrachlorethylene and trichlorethylene, are both chlorinated hydrocarbons and degreasers and are used commercially for the removal of oil and grease. Neither paraffin wax, stearic acid nor coal oil, nor a combination of the three is a chlorinated hydrocarbon.

Claimant contends that since the evidence showed death occurred at work, there is a presumption that it resulted from an industrial accident; that the burden was on the company to rebut this presumption and that it failed to do so.

The sudden death of an employee, occurring while performing his usual work in the customary way, may or may not be due to an accident. *Mere proof that the employee died while at work is not proof either that he sustained an accident while performing his work or that his death arose out of and in the course of his employment.* There must be proof of an unexpected or unforeseen event, happening suddenly and violently, as the result of an industrial accident. Entire claim in this case is bottomed upon the speculation that decedent inhaled poisoned spray while at work and that such inhalation was an accident or injury. 25 other moulders working in the same vicinity used the same bucket and the same mixture. None of them died as result of inhalation of the alleged poison spray. The only reasonable inference possible is that decedent neither inhaled, nor died from, poisoned spray and hence, he neither had an industrial accident nor sustained an industrial injury.

Finerson vs. Central Electric Co., Supreme Ct. of Missouri, Dv. 1, March 13, 1950. (227 SW_2 740)

Poisoned By Mislabeled Drink

CLAIMANT was employed as a machinist. The employer was engaged in the manufacture of plywood and veneer machinery. On September 13, 1947, while in the course of his employment, claimant drank carbon tetrachloride from a bottle labeled "Barclay's Gin" which was offered to him by a co-employee. The bottle contained a solution of carbon tetrachloride, which was known to the co-employee, but was not known to the claimant. The co-employee obtained permission from his foreman to take the carbon tetrachloride from the employer's supply for the purpose of cleaning an automobile seat cover. As a result of drinking this substance, claimant sustained accidental injuries in the nature of carbon tetrachloride poisoning and acute gastritis which caused him to be totally disabled for a period of time.

Court concluded that the claimant's injuries arose out of and in the

Scott DEMAND Oxygen Inhalator

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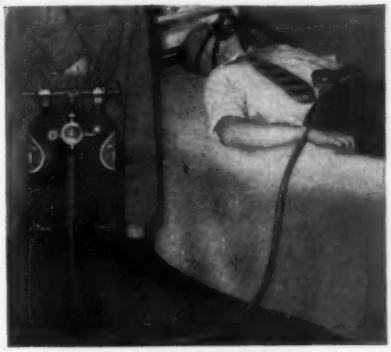
•PROTECTS HEALTH OF PERSONNEL
at Low Cost!



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Protect your safety record with Scott *Demand* Inhalator — the efficient, low-cost way to provide emergency administration of oxygen. Portable and easy to operate, the Scott *Demand* Inhalator can be used by inexperienced personnel, at any location. No adjustments of any kind—no special training needed. Supplies oxygen "as demanded" by patient, or by constant flow. Economical in use — initial cost much less than other equipment of comparable scope.

Type "A" DEMAND Inhalator

Scott DEMAND Oxygen Inhalator is made by the manufacturers of AIR-PAK Safety Breathing Equipment (using air, not oxygen) — the safe, low-cost way to deal with breathing hazards in toxic areas.

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SCOTT AVIATION CORP.
229 ERIE STREET LANCASTER, N. Y.
IN CANADA: SAFETY SUPPLY CO., TORONTO, ONT.

If you're not up on underworld slang, it means I've been jugged three times. Once more and they throw away the key!

I have to be careful. There was a time when weekends were pretty safe for a burglar to practice his profession. But that's all changed.

Many plant watchmen now carry DETEX GUARDSMAN Watchclocks. These infernal machines somehow keep watchmen from going to sleep. Naturally, I can't afford to pull a job in a plant where the watchman is alert.

The GUARDSMAN is unfair to burglars!

Mr. Executive — arrange for the added protection of the tape-recording GUARDSMAN in your plant. It's a trifling price to pay for weekend peace of mind. Send for free folder.

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76 VARICK STREET, NEW YORK 13, N.Y.
Sales and Service in All Principal Cities

course of employment and was entitled to an award.

Burns vs. Merritt Engineering Co., N. Y. Supreme Ct., November 28, 1949.

Allergic to Equipment Issued by Employer

CLAIMANT in connection with his employment seeks recovery for an alleged occupational disease. As part of his work in a tannery, he handled "green" hides saturated with lime water. He protected his hands from injury by the lime water with gloves furnished by his employer. The gloves were made of commercial rubber, a definite and solid substance produced by combining natural rubber and chemicals, some of which were gaseous or liquid in form at certain stages in the process of manufacture. Although the employee was not aware of the fact, it appears that he was allergic to rubber. As a consequence the contact of his hands and the gloves caused a dermatitis which disabled him for about four months.

The North Carolina Workmen's Compensation Act provides a recovery for occupational dermatitis caused by wearing rubber gloves made of a chemical compound which was originally chemical liquids, gases, or vapors and which has become solidified.

The employer contends that claimant failed to prove that his disabling dermatitis falls within the meaning of the statute on two theories. First, that there was no evidence that the dermatitis suffered by claimant was caused by solidified chemical compounds contained in the rubber gloves; and second, that such finding of fact, even if supported by evidence, is insufficient to justify the legal conclusion and the decision that the dermatitis suffered by claimant qualifies as a compensable occupational disease under the Workmen's Compensation Act.

The evidence did not suggest that the claimant had an allergy to some undefined chemicals, even though such chemicals may have been gaseous or liquid before they were combined with natural rubber to form commercial rubber. It was simply that the claimant was allergic to rubber in all its forms and to no other substance. The first complaint of the company has some persuasiveness. The second contention admits no reasonable doubt. A dermatitis resulting from contact with gloves made of commercial rubber, which is a definite and solid substance, cannot be adjudged to be "due to irritating oils, cutting compounds, chemical dust, liquids, fumes, gases, or vapors", without doing violence to the language employed by the legislature to express its intent.

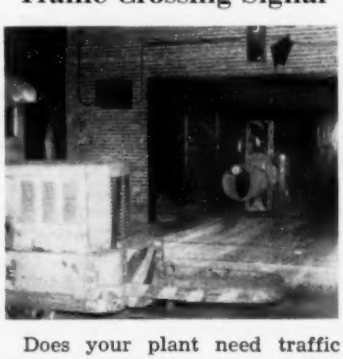
The contention of the claimant, therefore, that his disabling dermatitis an infection or inflammation of the skin was due to irritating oils, cutting compounds, chemical dust, liquids, fumes, gases or vapors, is not sustained by the evidence and cannot qualify as an occupational disease under any other provision of the Statute. Award was denied. *Henry vs. A. C. Lawrence Leather Company*, Supreme Ct. of N. Carolina, March 1, 1950, (57 SE2 760).

Death Two Years After Accident

McWILLIAMS was employed in a bleaching plant as a chemical mixer. In this capacity it was his duty to mix chemicals with water to form the solutions for bleaching, dyeing and finishing clothing. One of these chemicals was chlorine gas, which enters the bleaching plant in a pipeline leading to the vat where the cloth is treated.

During the morning of December 27, 1940, he opened a chlorine gas line to let the desired amount of

Traffic Crossing Signal



Does your plant need traffic cops at strategic vehicle crossings? An automatic one, like the above, prevents trucks from coming to grief at intra-plant electric railway intersections. The unit (arrow) warns with light and bell when a truck approaches the doorway.

gas into a water filled vat. The gas began to escape from a leak in the pipe. McWilliams put on a gas mask which either was defective or did not fit, and which, therefore, did not protect him; but he continued to attempt to repair the leak. In the course of his efforts he inhaled some of the chlorine gas. A coughing spell resulted.

He was treated in the clinic of the employer, and after the administration of first aid, he was instructed to go home, which he did. He returned to his work a few days later, and with slight interruptions, continued to work in the bleachery at his regular job for six months. Following the accident, the employee suffered from a bronchial condition, and had ailments. Late in May, McWilliams had a convulsion and lapsed into unconsciousness. He was given medical treatment consisting principally of the administration of phenobarbital. He continued to work at the bleachery through June and in August, after some hospitalization, he and his family moved to Tennessee. During the balance of 1941, the employee does not appear to have done any work. In 1942 and 1943, he did some work as a carpenter in Tennessee, probably for a total of six months or more. The employee continued to suffer from the bronchical condition, and his condition became progressively worse.

In October, 1943, he was admitted to a hospital for medical treatment and died within a day or two later. No claim was made by the employee following the accident against the employer or his insurer under the Workmen's Compensation law or otherwise. As far as the record discloses, the first knowledge of the employer that it would be claimed that the death of the employee was due to his inhalation of chlorine gas was a claim made before the Industrial Commission on March 30, 1944, after his death.

From the facts it is seen that the employee died more than two years after the happening of the accident. In the provisions of the act, where the employee dies after two years and within six years of the happening of the accident, the right of recovery is conditioned upon the existence and continuation of "total disability." Question is narrowed to the inquiry whether the testimony discloses that the employee died while total disability continued.

In applying the statutory requirements to the disputed fact in the case, it is apparent that for a period of approximately six months after the accident, the employee continued his work at the bleachery without significant interruptions. Following this period he engaged in other work in other places for various parties.

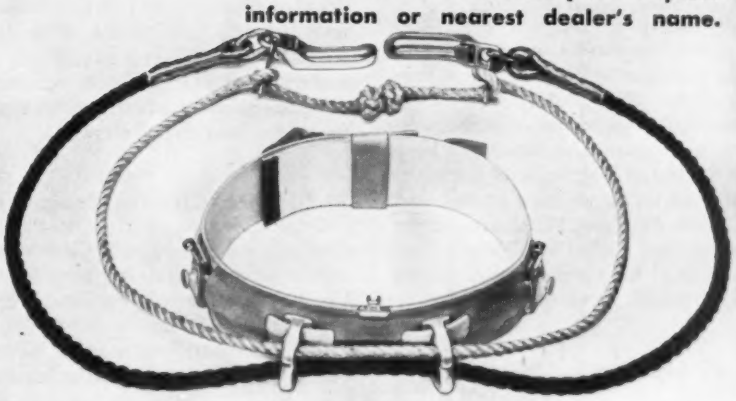
The term "disability" is defined by the Workmen's Compensation Law of the State of South Carolina, as follows: "The term 'disability' means incapacity because of injury, to earn the wages which the employee was receiving at the time of injury in the same or any other employment."

Since the statute is specific and clear as to the meaning of the term disability, its application to the evidence submitted in this case renders it impossible for the Court to make an award, death not having resulted while total disability continued, as the record revealed that the employee continued to work, and had a regular job for a period well over one year after the accident, no award was made.

McWilliams vs. Southern Bleachery & Paint Works, et al, Supreme Court of South Carolina, December 27, 1949. (57 SE2 26)

The First Step In Saving A Man's Life... IS IT WORTH A 3¢ STAMP?

INQUIRE about the Safe-Hi Window Cleaners' Belt and we will send you complete information or nearest dealer's name.



SHOCK ABSORBER BELT—that saves the man by saving the building anchor.

Shock absorber safety rope of Unolyn* • Service rope and safety rope completely separate. • All fastenings requiring strength are stitched, not riveted. • Web body pad a comfortable 4" width. • Light alloy rope eyes enclose waist belt as well as both ropes. • Drop forged steel non-slip single-pass buckle. • Safety factor of 7.6 for 150 lb. rigid weight dropped 5 feet.

*Produced by Flight Safety, Wilmington, Del.

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• SAFETY BELTS • LADDER SHOES
• POLE GRIPS • WALL GRIPS
• CHISEL GRIPS
• LIFELINES & LANYARDS

PRODUCT Information

PI 25 Safety Shoe Film

"One Ounce of Safety" is a sound motion picture produced by the Hy-Test Division of International Shoe Company to promote the acceptance of safety shoes by industrial workers. A manual with opening and closing remarks, projectionist's checklist and suggested questionnaire go along with the film. Booking details for this dramatic safety salesman will be provided on request.

PI 26 Shot, Sand Blasting

A four-page bulletin describing personal protection equipment for shot and sand blasters has been prepared by Mine Safety Appliances Company. Two airline-type respirators with protective hoods to keep out dusts and high velocity abrasives are shown, as well as photos and detailed data on MSA air supply accessories, including compressors, clean air blowers, valves, filters and pressure regulators.

PI 27 Lighting Guide

"Your Lighting Simplified" is a booklet issued by The Edwin F. Guth Company containing valuable information for the lighting buyer. Its purpose is twofold: first, it is a buyer's guide that helps in the proper selection and purchase of lighting equipment; second, it outlines a new type of light system devised by Guth that is said to reduce maintenance costs.

PI 28 Non-Slip Flooring

Full details on the construction and advantages of electro-forged steel running boards and brake steps on railroad cars are offered in an 8-page bulletin issued by Blaw-Knox Division of Blaw-Knox Company. The booklet contains dimensions and specifications of the standard steel panels which are adaptable for locomotives, tenders, box cars and other rail cars and equipment requiring platforms, running boards or brake steps.

PI 29 Revised RLM Specs

A newly-revised edition of the RLM specifications booklet, containing four officially-approved new specifications and many important revisions of existing RLM specs has been published by RLM Standards Institute. The 44-page booklet gives detailed specs for 18 different industrial lighting units which carry the RLM label. Specifications cover materials, shielding angle, reflector dimensions and contour, ballast temperatures, and many others.

PI 30 Safety Clothing, Equipment

Catalog No. 501, released by Safety Clothing & Equipment Co., describes and illustrates that company's full line of protective clothing, fire blankets, gloves, hoods, safety belts, litters, stretchers, acid pumps, ladder shoes and other protective equipment.

PI 31 Flame Retardant

A new fire retardant paint that "will at no time support combustion" is shown being given a going-over by testing agencies in a six-page folder published by Flame-Seal Corporation of Ohio. UL approved, the paint is called Flame-Seal, comes ready to use. Folder includes pertinent information about the paint, gives recommended industrial applications.

OH NEXT MONTH

How to Select the Correct Dust Collector for your Exhaust System

PI 32 Portable Cleaner

The U. S. Hoffman Machinery Corporation offers a four-page, two-color brochure describing its new Hoffo-Vac No. 30, a heavy industrial portable cleaning unit that operates one fifty-foot length of 1½ inch vacuum hose on a 3 hp motor. Diagrammatic drawings and cutaways show the construction of this unit. Complete construction details and specs are given in charts, and an explanation of its operation and application is included in the folder.

PI 33 Aluminum Paint

Six special aluminum paints are described in detail by the Skybrite Co.'s illustrated brochure. The paints are made for specialized industrial maintenance uses, have qualities for rust, heat, acid-alkali, etc. resistance, depending upon the desired application.

PI 34 Dust Suppression

Two new bulletins on hydroclone dust suppression have been published by Whiting Corporation. The bulletins: "Hydro-Clone Sludge Tanks", which describes the function and gives dimensions for both manual and automatic sludge settling tanks; "Hydro-Clone Installations", showing a variety of installations of Hydro-Clones operating under typical conditions. Whiting's theory is that wetting is the best method of dust suppression: their Hydro-Clone equipment reduces dust particles to sludge for easy disposal.

PI 35 Magnetic Separators

An 8-page catalog issued by Dings Magnetic Separator Company describes and illustrates the application, operation and design of the Dings non-electric, Alnico Perma-Drum magnetic separator. The Perma-Drum can be used for tramp iron removal and scrap separation. Explanatory text covers design features of three models, gives information on the correct selection of each model for specific jobs.

TECHNICAL FILE ON SOLVENTS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

E 99. BENZENE CONCENTRATION. According to the American Standards Safety Code the maximum allowable concentration should be 100 parts of the vapor per million of air. There have been indications that the 100 ppm figure probably is a little high, so that lower concentrations (75 ppm) may be desirable for the complete elimination of the benzol poisoning hazard. Suggested maxima from 31 to the 100 parts per million limit have been variously proposed.

E 100. ACUTE BENZOL POISONING. In industry the effects of benzol are introduced into the system by inhalation, which is the most frequent, or absorption through the skin. Benzol vaporizes readily.

The inhalation of large amounts of benzol vapor will cause *acute* poisoning, usually fatal unless prompt medical attention is obtained. As in other anesthetics, death results from paralysis of the respiratory nerves. Unlike chronic poisoning, it represents an attack on the nervous system, not on blood content. *Cases of acute poisoning often occur when the workmen are in the vicinity of overflowed containers, broken piping systems, or if they are saturated with the liquid.* Danger of acute poisoning exists when workmen are permitted to enter storage tanks for cleaning or repair without the necessary protective equipment even though the vessels have been emptied thoroughly and steamed. *Under no circumstances should a workman be permitted to enter a benzol storage tank without being protected with a type A supplied-air respirator, or a gas mask approved by the United States Bureau of Mines.* There should be a safety line around his body and an attendant with emergency equipment outside the tank.

E. 101. ACUTE BENZOL POISONING SYMPTOMS. The worker poisoned by benzol vapors sweats profusely, experiences headache, nervous excitement, coughing, vertigo, drying of skin, flushing of face, subnormal temperature, delirium and coma. In the case of severe poisoning, the individual feels ill and depressed, as well as nauseated. He may vomit, he may succumb to mental apathy, to loss of consciousness, to tremors, to respiratory or circulatory difficulties, to paralysis of the motor or sensory systems. The mucous membranes will sometimes be subject to pinkish coloration.

E 102. FIRST-AID TREATMENT. Anyone who has been exposed to acute benzol poisoning should have the immediate attention of a physician. Until the latter arrives, however, certain procedures should be followed. The victim should be removed immediately to fresh air. Benzol-contaminated clothing should be stripped off and the patient's body washed with soap and water to remove any lingering traces of benzol. In case the victim is not breathing, the prone pressure method of resuscitation should be applied immediately and should continue without interruption until breathing is restored, or the doctor considers further effort useless.

To avoid shock reaction, the victim should be kept reclining and warm, heat being applied as necessary. Wherever carbon-dioxide-oxygen apparatus is available, the gas should be administered immediately, although oxygen administered alone will also be effective. After breathing has been restored, and when consciousness has returned, a stimulant, such as strong coffee, can be given, but no alcohol in any form. Even in the case of apparent full recovery, the worker should have constant medical supervision to prevent any of the often severe after-effects.

E 103. CHRONIC BENZOL POISONING. When benzol vapors are absorbed into the body, elimination takes place mainly through the lungs after fresh air is reached. Some of it, while in the body, is oxidized and combines to form inorganic sulfate products to be expelled through the urine. The amount found in the urine by the medical department at any time *during the work period* indicates the amount of exposure and degree of poisoning. The United States Bureau of Mines calls this the urine sulphate test. This process thus becomes an important guide in prevention, as usually it precedes all other signs in *chronic* poisoning.

E 104. SYMPTOMS. Early external symptoms of poisoning are a feeling of continual fatigue, lethargy, and dryness of the air passages. Subsequently, come headache, loss of weight, shortness of breath, nervousness, dizziness, bleeding gums, palpitation, paleness of the skin and insomnia.

To produce these effects in chronic poisoning, benzol or its products within the body act mainly on the red marrow of the bones to upset the normal blood functions there. The kind of reaction is thought to depend upon the duration, as well as the degree of exposure. The tissue of the bone marrow normally is instrumental in forming white anti-infection and red hemoglobin blood cells and the "platelets" of the blood which determine its clotting properties. Early in unsafe exposure periods the solvent may first stimulate the marrow so that more white cells are produced. This is not true as exposure continues, the result then being a decrease in the formation of red cells, leading to anemia, with an enlarged liver, rapid pulse, weakness, dizziness and short breath. As the number of white cells diminishes also, resistance to secondary infection is decreased and

TECHNICAL FILE ON SOLVENTS

general weakness sets in. Ulcers in the mouth and throat may develop. Finally, with the decrease of the platelets as well, the delay in clotting of the blood induces hemorrhaging from the mucous membranes, under the skin and in the brain.

Recovery can be complete, but may take several months. Early removal from exposure and a competent doctor's care are essential.

The susceptibility variations in exposed workers is thought due in great part to the individual resistance of the bone marrow.

E 105. HOW BENZOL AFFECTS THE SKIN. The solvent action of benzol removes the protective fat and oil from the skin. If this condition is not controlled or prevented, workers will suffer from serious skin irritations and lesions. Injuries similar to second degree burns result from constant wetting of the skin with benzol solutions. *This hazard can be controlled by equipping workers with proper protective equipment, such as gloves, sleeves, aprons, etc., made of synthetic rubber or of other material which will not be dissolved by the benzol.* Protective creams of the lanolin type are used, but cannot possibly give complete protection.

E 106. PREVENTION AND CONTROL METHODS. The control of the benzol hazard falls into two separate categories: personnel and work-room. A thorough pre-employment physical examination of all workers who may be exposed to the benzol hazard will do much to reduce the incidence of chronic poisoning. Workers with organic diseases of the heart, lungs or kidneys, or with a tendency to hemorrhages, anemia or other abnormalities of the blood, should not be permitted to work where benzol is present.

Rotation of workers should be practiced as a fundamental feature of control. Constant medical vigilance by blood examination (a complete blood count—not just a white count) and urine tests should be established at intervals of two to three months. With the least variation from the norm, the worker should be removed from the benzol operation.

A most important factor is the education of the workers in the hazards of benzol. They should be instructed to report for examination upon noting bleeding from the nose, gums, or other mucous membranes, or if unaccountable hemorrhages or discoloration are noticed under the skin.

E 107. WORK-ROOM CONTROLS. In general, controls for the work-room follow measures cited for carbon tetrachloride: enclosure, exhaust ventilation, etc. The atmosphere of the working place should be kept within safe limits, and should therefore be checked constantly, by persons skilled in benzol detection methods and apparatus, for the concentration of benzol present. All operations should be enclosed if possible, and open, separated from the rest of the working place. Proper ventilation is absolutely necessary.

Because benzol vapors are almost three times as heavy as air, window ventilation is not sufficient to make the working place safe, but rather diffuses the fumes throughout the entire room. *The whole room should be exhausted by mechanical means, drawing at the floor level with fresh air coming in through the ceiling.* Obviously, the most efficient means of ventilation is a mechanical exhaust system at the point of origin of the fumes. This installation is relatively simple in completely enclosed operations.

Where the use of open containers of benzol is unavoidable in special processes, special means of ventilation are necessary. Open pans should be set in larger vessels, leaving an air space 2 to 3 inches from the bottom with the rim of the large vessel extending 4 to 5 inches above the smaller pan. A small exhaust apparatus attached to the bottom of the larger container will draw the dangerous concentrated fumes out. Another ventilation method is to surround the open operation with a gas-tight metal wall 4 feet high with mechanical exhaust at floor level. Fountain-type safety cups are recommended instead of uncovered portable vessels to hold benzol, benzol mixed with other ingredients, or rubber cement. For bulk usage, safety cans with self-closing lids are standard equipment.

All benzol exhaust system installations should conform to the regulations of the NFPA. Enclosures and ducts must be of non-combustible material. Ducts should be round, short, and as straight as possible. *To avoid the spread of fire, ducts should never pass through other rooms or partitions, and a ventilated collar should be installed on ducts where they pass near combustible materials.* Ducts should have no low places or pockets that might permit the accumulation of vapors or flammable residue. Where the duct is exposed to the entrance of sparks at the outlet, the latter should be protected with the use of bronze or copper screening. It is preferable, of course, to locate the duct outlets in such a way that no sparks or flame will occur. Each room or operation should be provided with its own exhaust system. Ducts and cabinets require frequent cleaning with non-sparking tools to prevent the collection of flammable residue.

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PREPARE FOR THE WORST

continued from page 17

tamination on the back and palm of each hand, through placement of the hands in paper-bag lined apertures and on the shoes by standing on the two indentations. For contamination of the body, a standard bathtub and shower are maintained in a room adjacent to the rest ward where the employee can be completely cleaned of the radioactive materials covering him or his clothing.

Cases of poisoning can be anticipated, and the dispensary must be equipped to meet these emergencies. Again, in a wall recess in the main treatment room, a completely stocked poison-antidote cabinet is maintained together with printed instructions for use of the chemicals and medicaments in the case of ingestion or inhalation of the more common poisons.

For serious cases requiring immediate and continuous oxygen, the rest ward is used, and alongside each bed is an oxygen cylinder with mask. In the event of gas poisoning among several employees, attachments are available which will allow four breathing outlets off a single cylinder.

As mentioned previously, a disaster could hit the dispensary facility itself and certain devices would be needed beyond those outlined.

Disaster Equipment

Planning in industrial areas should include the provision of portable rescue and first aid materials that can be moved readily for emergencies. Materials for this purpose have been assembled in appropriate containers and each set includes: 1) a chest holding emergency dressings and other surgical materials, 2) a box for blankets, 3) a box for four folding litters, 4) a ten gallon cask of drinking water, and 5) a pair of folding litter supports. The disaster chest has two full length handles attached to allow carrying, and the lid is so hinged and constructed that its top can be used as a work table, holding opened supplies. The two top trays are removable, permitting access to the larger items kept below. Twelve blankets are folded to fit into the blanket container. The supports used for the litters are merely a variety of a carpenter's folding horse, hinged at the top and notched to hold the rounded litter ends, and kept upright by a single connecting rope between the two lower pieces. Two such supports are kept with each set of disaster chests. The number of these supply assemblies is determined by the plant area, the explosion potential of certain operations, the availability of medical care, and the transportation facilities of the plant.

The need for a rapid, smoothly functioning, emergency medical service in the dispensary or in the field cannot be over-estimated. *Time is always the determinant between living and loss of personnel.* As in the Army, the workers can carry on with greater security when they know that good medical aid at times of stress can be moved in almost instantly. At best, disaster plans in execution never meet the expectations of the planners. But a preparation, at least as much as is outlined here, will help render the urgency of the catastrophic moment somewhat less confused, less harried, and less disrupting. A scheme, from the point of view of equipment, paralleling the one outlined, will offer a practical solution to the preservation of lives when plant destruction has taken place.

Stanzoil NL-34

New Worker Comfort in This Elastic Knit-Lined Neoprene Glove

This Stanzoil Duplex NL-34 is designed expressly for, and is sold only to, industry. Elastic-knit lining stretches with every hand movement, gives new worker comfort and protection, more freedom than old-style flannel linings. Slip on and off easy as a cloth glove. Non-slip finish holds oily objects in a sure grip. Chocolate-brown DuPont Neoprene resists damage from oils, acids, caustics. Stanzoil NL-34's give you comfort and protection at lower cost per hour. Sizes small, medium and large. Larger Duplex Gloves, Catalog No. NL-42 and NL-52. Ask your supplier or write for informative catalog today.

Synthetic Rubber Division

The Pioneer Rubber Company
643 Tiffin Road Willard, Ohio, U. S. A.
Los Angeles, California

STANZOIL PIONEER

OVER 30 Years OF QUALITY GLOVE MAKING

BEFORE YOU BUY ANY SCAFFOLD . . .

Send For This Folder

Describes HI-LIFT Extension Scaffolds which can be extended from a six-foot ladder to a 30-foot scaffold in less than 5 minutes . . . hand or electrically operated. Comes to you ready for work — no erection required, no loose parts. Built to meet individual requirements. Ideal for Painting, Lighting, Cleaning, and all overhead maintenance. Pays for itself in time and labor saving.

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HI-LIFT MARQUEE SERVICER
ATLAS ONE-MAN TRUCK LOADER

ATLAS INDUSTRIAL CORP.
852 39th St. Brooklyn 32, N. Y.

. . . And Sudden Injury

Staring through shock-glazed eyes, this lineman is lowered to the ground by rescuers. Both hands were burned off by a 4,000 volt shock.

INTERNATIONAL NEWS PHOTO

← And Sudden Injury

MOST men have a healthy respect for high voltage electricity: nearly anyone working around it knows that 1,000 volts charging through a man's body can knock him flat, leaving him in such severe, non-breathing shock that even artificial respiration may fail to start his lungs working again. Anything up around 5,000 volts can broil you just as neatly as a penitentiary electric chair.

This numbed lineman is being hauled down from his perch after tangling with 4,000 volts. During his twenty minute wait for rescuers, he has been staring thickly at the two scorched stumps that used to be his hands, trying to figure out what he did wrong, or forgot to do.

Work on overhead lines is always hazardous. Even if the line being worked on is dead, neighboring lines are likely to be hot. Handling of lines in erecting, shifting or removing circuits is one common cause of fatal accidents. The fact that workers must scamper from pole to pole in line work accounts for a lot of injuries and deaths from brushing up against sizzling hot lines.

For anyone whose job takes him near overhead lines or other sources of dangerous voltages, here are some suggestions to avoid tragedies like the one at the left:

Cover all grounds within reach with rubber blankets, mats or line hose fastened in place. Transformer cases should be covered, too, along with all secondary wires. Cover every line within reach with a line hose. If possible, work below live lines.

For work on live lines carrying less than 4,000 volts, wear rubber gloves with protectors. If the work area is cramped, wear rubber sleeves with the gloves.

Allowing a liveline to dangle loosely is inviting electrocution. Snub it in a safe place with a rope until it can be connected.

Rubber gloves should be tested when they are bought, at three times the voltage they will have to resist at work. They should be retested at least monthly and checked for air leaks before each use. Leather protectors should be worn over the rubber gloves.

For Safety's Sake Use

DAYTON SAFETY LADDER

Sizes 3 feet to 16 feet in height with standard rubber safety shoes at no extra cost.

Maintenance men everywhere rely on Dayton Safety Ladders for maximum safety and convenience. Daytons are constructed of tested airplane spruce and reinforced with rigid steel supports to give great strength and lightness of weight.

Handrails of steel guard the large roomy platform for added safety. Half of platform can be raised to form an extra step, when needed. These famous ladders can be set up instantly, are easy to carry and fold compactly for storing. Automatic locking feature insures safety while ladder is in use.

Write today for Bulletin No. 100

DAYTON SAFETY LADDER CO.

2337 GILBERT AVE. CINCINNATI, OHIO

In Canada—Safety Supply Company—Toronto

10 TIMES HIGHER ABRASION RESISTANCE

(standard abrasive wheel test)

SURETY
SURESEAL
SYNTHETIC RUBBER
industrial gloves

PLUS

Sureseal Synthetic's higher snag and chemical resistance means safer, longer-wearing gloves—*much* lower glove costs.

Standard tests show that Sureseal Gloves are miles ahead on all counts—besides higher abrasion resistance, Sureseal Synthetic Rubber has 4 times higher snag resistance, much higher chemical resistance, than either natural rubber or standard synthetics.

Get more hand protection for less money in your plant—ask your distributor about Surety Sureseal Gloves, or write direct.

THE SURETY RUBBER CO. DEPT. O CARROLLTON, OHIO

In Canada: SAFETY SUPPLY COMPANY, Toronto, Ontario

Literature Featured In Ads

The publications listed below are available without charge. Simply circle the number of the items desired on the postage-free reply card bound in this issue and mail it.

A-1 . . . A sample bag of their Sol-Speedi-Dri absorbent is offered by Speedi-Dri Corp., to help you prove to yourself the possible savings and accident reductions using this product.

A-2 . . . How much could a visual correction program save you? American Optical's latest booklet answers that one and tells how better worker vision boosts morale, cuts accidents.

A-3 . . . Warning signs for every hazard, made of long-lasting steel, are catalogued in the new booklet published by Stonehouse Signs, Inc.

A-4 . . . Non-slip, protective rubber gloves for industrial use are described in just-published Pioneer Rubber Co. Booklets.

A-5 . . . Start-to-finish dust control planning is offered by Kirk & Blum Mfg. Co., who will send one of their consultants to look over your problem, at no cost to you.

SCRUB... the AIR in your plant CLEAN
with Schmieg CENTRI MERGE
Automatic
DUST and FUME
Eliminator
Dust and fumes don't get a chance to circulate in plants equipped with a Schmieg CENTRI-MERGE Eliminator. The moment dust or fumes develop from buffing, burring, grinding, polishing, curing or any other processing operation, they are swept up on an air stream that carries them back through ducts to a central Collection Unit. In the washing chamber of this Unit the CENTRI-MERGE high pressure centrifugal water action literally scrubs every last vestige of contamination from the air stream—cleans it so thoroughly that, in many cases, it can be recirculated back into the plant. That's why users are so enthusiastic about what CENTRI-MERGE accomplishes. Protects both workmen and work.
Consult Schmieg engineers regarding your problems of dust and fume control.
THE best AIR PURGE is CENTRI MERGE
Schmieg INDUSTRIES INC.
Engineers & Manufacturers
303 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

A-6 . . . Safety Signs for all purposes are illustrated in booklets offered by Standard Signs, Inc.

A-7 . . . Bulletin M-70-A, published by Industrial Products Company, shows how you can save time and money with portable drinking fountains in operations where permanent water supply is not available.

A-8 . . . Their full line of equipment and accessories for head and eye protection is displayed in latest catalogs offered by Dockson Corp.

A-9 . . . The free demonstration kit offered by Time-Saving Specialties is designed to show you how to achieve high gloss floor finishes without slipperiness.

A-10 . . . Dayton Safety Ladder Company's Bulletin No. 100 catalogs this firm's selection of safety ladders for maintenance and safety men, gives complete construction and price data.

A-11 . . . The protection of workers' hands with industrial work gloves helps you keep up with shipping schedules by preventing lost-time accidents. Catalogs from Hood Rubber Company show the full Hood line of protective gloves.

A-12 . . . A Finnell system consultant will visit your plant at no obligation to you, help iron out your floor scrubbing problems. Helpful literature is also offered free by Finnell.

A-13 . . . Safety shoes with neoprene-and-cork soles, made in many different styles, are described in literature just published by Hy-Test Division of International Shoe Company.

A-14 . . . Before you do any scaffold buying, better check through the folder Atlas Industrial Corporation is offering. It describes Atlas Hi-Lift extension scaffolds, shows how they're built and how to use them.

A-15 . . . A vest pocket notebook is a handy thing to have when you make plant tours. Chicago Eye Shield has one for you, along with its newest catalog on Cesco safety goggles.

A-16 . . . Ansul Chemical Company's File No. 506 contains a pile of really helpful fire fighting information, and a catalog showing the full line of Ansul extinguishers.

A-17 . . . Glow-in-the-dark striping is the latest wrinkle to come out of the Milburn Company's labs. Milburn's latest catalog shows its complete selection of protective clothing, including the new striped garments.

(Continued on page 48)

NEW PRODUCTS

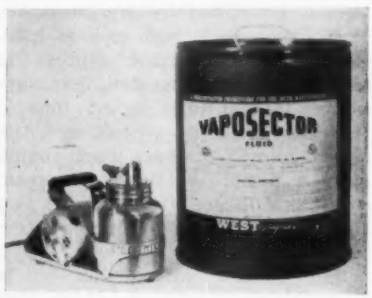
NP 1 Truck Backup Warning

Trucks backing into workers on construction and loading jobs, or on operation in which men have to work near constantly moving vehicles, can be eliminated as sources of accidents by the installation of B. F. McDonald Company's new Reversalarm, a low current, weatherproof gong that mounts on any truck chassis near the rear. The Reversalarm clangs a loud warning within the first eight inches of the truck's backward motion, whether the vehicle's motor is running or not.

For further information, circle NP 1 on the postage-free reply card bound into this issue.

NP 2 Insect Killer

West Disinfecting Co. has introduced a portable electric sprayer for insect control that can be used



for either area-fogging or direct-contact use. The unit consists of a 25-ounce sprayer and five gallons of insecticide (West says the sprayer uses one ounce of insecticide a minute for fogging, one-and-a-half ounces a minute for contact spraying). Their insecticide is so powerful, the manufacturers say, that one ounce of it will knock off flying insects within 1,000 cu. ft. of space Two ounces kills all crawling insects in the same area.

For further information, circle NP 2 on the postage-free reply card bound into this issue.

NP 3 Floor-Cleaner Accessory

A handle-type solution tank for use on Kent floor machines has been announced by the Kent Co., Inc.

Made of rust resistant galvanized iron, the tank has a capacity of 3½ gallons. According to the manufacturer, it has been designed so that it will not affect the balance of the floor machine whether it is full or empty. The tank has a large opening for quick filling, a positive shut-off valve and a petcock for draining unused solution.

For further information, circle NP 3 on the postage-free reply card bound into this issue.

NP 4 Plant Bulletin Board

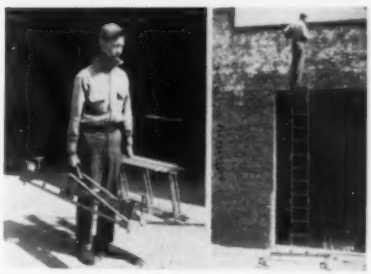
Management notices and employee activity messages can be posted side by side on the Dav-Son three panel bulletin board, designed by A. C. Davenport & Sons, Inc. The board consists of three cork-backed panels in a hardwood frame, each panel enclosed by a separately locking glass

door. Cork surfaces provide an ideal display area for pinning up photos, safety posters, plant news items. A removable message panel slips into any of the three positions.

For further information, circle NP 4 on the postage-free reply card bound into this issue.

NP 5 Portable Ladder

A lighter-than-aluminum steel is used in the construction of a compact, portable ladder that can be set up by one man in little more than five minutes. Made by Atlas Industrial Corp., the ladder extends from four to twenty-four feet, comes equipped with a working platform. Extra bearing plates and leveling



screws for use on soft or uneven surfaces are included in the kit.

For further information, circle NP 5 on the postage-free reply card bound into this issue.

NP 6 Explosion-Proof Cooler

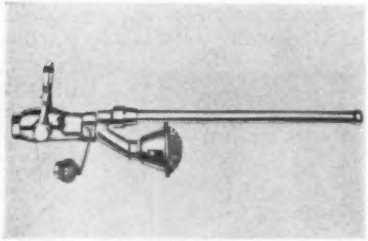
Cordley & Hayes has developed a new explosion-proof electric water cooler for operation in hazardous locations coming under Class I, Groups C & D as defined in the National Electrical Code. UL approved, the coolers are equipped with a fully sealed hermetic refrigeration system and a stainless steel cold water storage tank and seamless copper pre-cooler with externally bonded coils. The cooler's cabinet measures 14" x 15" x 43", and is supplied with either foot pedal, hand control, or both.

For further information, circle NP 6 on the postage-free reply card bound into this issue.

NEW PRODUCTS
continued

NP 7 Extinguisher Extension

A new device which can be inserted in their SG-48 WaterFog nozzle to provide five different types of discharge from one nozzle has been announced by Rockwood Sprinkler Company. The FF Foam extension unit, combined with Rockwood's standard nozzle, makes the nozzle suitable for fighting any fire in ordinary combustibles, flammable liquids or materials that can be extinguished with water alone or water mixed with foam liquid.



For further information, circle NP 7 on the postage-free reply card bound into this issue.

NP 8 Full-Vision Gas Mask

A full-vision gas mask, called the Pur-a-Weld, has been developed by Acme Protection Equipment Company to keep workers safe from hazardous gases or smokes. Lenses in shades from 4 to 12 are available for welding work. Designed to be used interchangeably with dust-and-fume cannisters or compressed-air units, the mask has replaceable air supply to meet different working conditions.

For further information, circle NP 8 on the postage-free reply card bound into this issue.

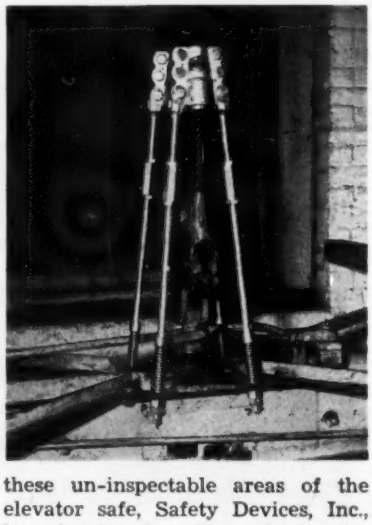
NP 9 Safety Hammers

The all-metal construction of Universal Machine Company's gilding metal Safe-T-Hammers eliminates dangerous broken handle accidents that send hammer heads flying. Their electrically welded tubular steel handles are slightly flattened for better gripping, and crimped with a butterfly twist at the head to prevent separation of head and handle. Stocked in thirteen weights ranging from ½ to 15 pounds, the hammers are returnable after usage to the manufacturer, who will credit their return according to current markets.

For further information, circle NP 9 on the postage-free reply card bound into this issue.

NP 10 Elevator Safety Clamps

Elevator accidents caused by socket failures, including wire rope crystallization at the point of socketing, or by bolt failure at the point where wire ropes attach to the car, are almost impossible to avoid by inspection because of the difficulty of getting at those parts. To make



these un-inspectable areas of the elevator safe, Safety Devices, Inc., has developed a line of elevator safety clamps for all types of industrial elevators.

For further information, circle NP 10 on the postage-free reply card bound into this issue.

NP 11 Drum Head Cutter

A manually operated head cutter that takes off drum heads in much the same way a kitchen can opener removes the lid from a can of peas has been developed by Schinker Manufacturing Company. In sixty seconds, this cutter will take the head off empty or filled drums from

10 to 55 gallons, and from 20 to 16 gauge stock. Lightweight (36 lbs.), easily portable, it leaves a smooth edge, flanged slightly inward. Cutter blade will cut about 1000 heads before resharpening is needed.

For further information, circle NP 11 on the postage-free reply card bound into this issue.

NP 12 High Heat Protection

Ply No. 8, developed by The Milburn Company, is a protective cream which is applied by workmen before exposure to high radiant heat. According to the manufacturer, Ply No. 8 allows men to stand exposure seven to ten times longer than is possible without protection. Any plant doing high heat work should find a sample of this new cream useful. Milburn offers sample jars free for the asking to anyone interested.

For further information, circle NP 12 on the postage-free reply card bound into this issue.

NP 13 Safety Shoe Film

Hy-Test Division of International Shoe Company a few months ago announced completion of its "One Ounce of Safety" film, offering it on loan to interested safety directors. Demand has been so heavy, Hy-Test says, for permanent possession copies that prints of the 16 mm. film are now being offered for sale. Purpose of the movie is to provide a

forceful visual tool to impress workers with the importance of wearing protective footwear.

For further information, circle NP 13 on the postage-free reply card bound into this issue.

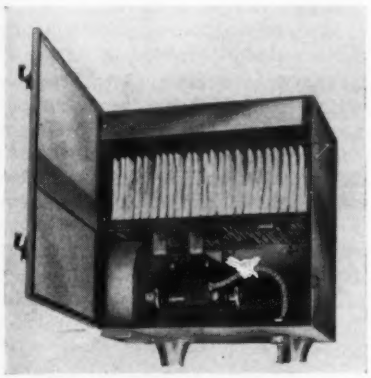
NP 14 Soundproof Booth

The din of presses and other production machinery is effectively screened out of inter-plant or outside phones by Acousti-Booth, a soundproof telephone booth made by Burgess-Manning Company.

For further information, circle NP 14 on the postage-free reply card bound into this issue.

NP 15 Self-Contained Collector

The Hisey-Wolf Machine Company is marketing a new dust



collector that requires no outside piping of any kind. Dusty air is drawn into this unit, filtered through close-woven fabric and steel wool filter bags. Heavy particles are directed downward by the machine's baffle plate into a large tray. Lighter stuff is shaken from the bags onto the tray by a foot lever.

For further information, circle NP 15 on the postage-free reply card bound into this issue.

NP 16 Mechanical Drum Handler

The Ernst Drumobile mechanically lifts heavy (up to 850 pounds) drums or barrels by simple leverage, taking over the muscle work in an operation that has been a major source of hernias and backstrains. The barrel lifting toe of this unit slips under drums, jacks them up without tilting and holds them securely while they are being moved. Hot loads can be wheeled away in complete safety, since the operator's hands do not touch the container.

For further information, circle NP 16 on the postage-free reply card bound into this issue.

New Product Briefs

For further information on any of the New Product Briefs, just circle the corresponding numbers on the postage-free reply card bound in this issue.

NP 17 Anti Toxics

A head-and-shoulder hood offering protection against ultra-violet and infra-red radiation, impact and pitting, and inhalation of toxic fumes particularly adapted for use by welders working near stored toxic materials, has been announced by Mine Safety Appliances.

NP 18 Rubber-coated Gloves

Edmont Mfg. Co. has added a new gauntlet style to its line of work gloves. This model's palm and thumb are coated with rough-textured natural rubber; back of the glove is canvas with knuckle band and elastic insert.

NP-19 Floor Magnet

Magnetools, manufactured by Multifinish Mfg. Co. are rotary floor magnets with long, low clearance handles that make an easy job of picking up metal scraps. Magnet is permanent, can be used anywhere in carpet-sweeper fashion.

NP 20 Gas-Tight Door

Any operation using or generating gases, vapors, steam or smoke can find application of the insulated gas and vapor-tight door made by Jamison Cold Storage Door Co. The door's high temperature insulation makes it suitable for infra-red and other high temperature drying rooms.

NP 21 Electric Hand Dryer

Mounted on washroom walls, an electric hand dryer developed by National Dryer Corporation dries workers' hands by hot air in about twenty seconds—faster and cheaper than any towel could do it, according to the maker.

NP 22 Foot-Pedal for Toilets

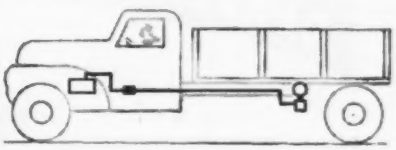
The Easy Flush Pedal converts hand-operated flushing action on toilets to foot-pedal flush. Approved Products Co., manufacturers of the device, say that the convenience of foot flushing encourages sanitary practices among employees, eliminates sticking valve problems.

WITH

McDonald

REVERSALARM

Equip your trucks with McDonald Reversalarm to give workers full protection from backing vehicles! It's simpler to play safe with this efficient, completely automatic, reverse warning system.



Reversalarm mounts near the rear of the truck... sounds a sharp warning gong with the first 8 inches of backward motion—*with or without truck motor running!* Single stroke, low current gong employs automatic interrupter switch that connects on transmission speedometer cable take-off. Easy to install... weatherproof, rugged construction... operates on 6 or 12-V systems.

Write today for bulletin and prices!

B. F. McDONALD CO.

Manufacturers & Distributors of Industrial Safety Equipment

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INDUSTRIAL EXHAUST SYSTEMS

continued from page 22

also used to increase effective exhausting for fume removal. They consist of a hood-within-a-hood arrangement. The inner hood is fitted to form a slot about ¾" wide around the edge of the outer one. The high velocity through this slot at the rim of the hood forms an air curtain, providing better air distribution and preventing vapors from curling outward and escaping around the hood.

Lateral Slotted Hoods. Where material handling equipment precludes the use of canopy hoods, a combination of pressure and exhausting can be used to withdraw vapors from tanks. Air is blown across the surface of the tank towards the exhaust inlet—both hoods running the full length of the tank —at velocities from 1000 to 2000 f.p.m. The slotted exhaust hood should have a much larger opening than the pressure outlet and should be designed to handle six times the volume delivered by the blower. This is due to the relatively small loss of jet pressure as compared with exhaust suction: 50% of the velocity remains at a distance of 11 times the diameter of the *pressure hood,* while 90% of the velocity is lost as close as only one diameter from the *exhaust hood.* This method is limited in effectiveness to narrow tanks and heavier-than-air vapors. Larger tanks call for the canopy hooding described above or for plain lateral exhausting.

Booths. The same factors apply to spray or grinding booths as to enclosed canopy hoods. For some spraying operations, a depth of only a few feet is required. The shallower the booth, the higher the face velocity of air needed: this prevents contaminants bounding off the walls of the booth towards workers. A booth two feet deep should be provided with air at a minimum of 200 f.p.m. Duct inlets in such booths should be baffled to prevent spray from entering the pipes and clogging them or creating fire hazards.

Downdraft Hoods. For removal of dust and fumes in shake-out operations, the combined local and general exhaust effect of downdraft hooding is advantageous. An example of this is the shaking out of molds. Enclosure — with exhaust from top or side—of the shake-out tables is most desirable since large quantities of dust and fumes are released. General ventilation around the table, as well as the greatest possible enclosure, is required. The exhaust inlets are slots in the floor beneath the shake-out, and are adjustable to provide sufficient velocity (at least 300 f.p.m. at the edge of the grate.) To prevent settling of the collected dust, duct velocities should not go below 4000 f.p.m.

C. MOVING AIR TO COLLECTORS

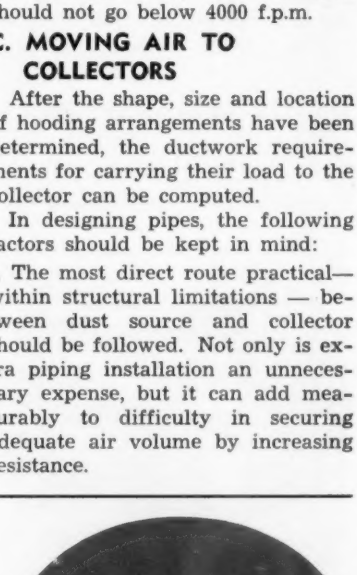
After the shape, size and location of hooding arrangements have been determined, the ductwork requirements for carrying their load to the collector can be computed.

In designing pipes, the following factors should be kept in mind:

• The most direct route practical—within structural limitations — between dust source and collector should be followed. Not only is extra piping installation an unnecessary expense, but it can add measurably to difficulty in securing adequate air volume by increasing resistance.

DEADLINE DOUBTS?

. . . stay on schedule with HOOD gloves!



MODEL #4703

— Full Neoprene coated, knit wrist style used in all general industry. Liquid proof, curved fingers, no seams on working surface.

Industry is always on the lookout for an economical solution to the many production problems involved in maintaining shipping schedules. And for *one* of these ever-present problems, the protection of employees' *vital* hands, you need look no further. The most economical, longer lasting solution is Hood Industrial Work Gloves!

Shown here are two of the many and varied types of Hood gloves available for industry today . . . gloves that have resulted from the combined and continuing efforts of experienced chemists, engineers and technicians using the most modern equipment and techniques available, *plus* the further proof of production performance assured by "on the job" testing in *every* type of industry!

Whatever your industry may be, whatever your protection problem may be, adopt this *safe* solution . . . the Hood line of Neoprene, Rubber or Plastic coated gloves! Our catalog is yours for the asking.

MODEL #4710

— Neoprene palm coated glove for general use in general utility but having 7 — 8 times the wear of standard canvas gloves.

HOOD for NEW Safety PLUS

HOOD RUBBER CO. Watertown, Mass.

• Pipe size is determined automatically by consideration of air volume and required velocity for conveying it. State codes carry minimum duct diameters for exhausting from various machines, and tables of pipe sizes are available.

• Avoid restrictions of air flow. Any restriction will add to the total resistance which must be overcome by the motive power of the system, and will hinder efficient operation.

The interiors of all ducts should be smooth and free from obstructions. Galvanized sheet metal—riveted and soldered—is frequently used, unless the presence of corrosive fumes, temperatures above 400 degrees F., or other factors make its use impractical. Welded black iron may also be used on the same application as galvanized pipe. Minimum thicknesses vary between No. 22 gauge (for non-abrasive matter in small pipes) to No. 10, or larger. Sharp elbows, short tapers in pipe diameter, sharp edges and burrs all increase the friction of air traveling through the system, calling for more power to operate it.

Rectangular ducts should be used only where clearances prohibit round construction. When required, rectangular pipes should be as nearly square as possible. Clean-out openings should be provided so that all parts of the system are readily accessible to prevent clogging. Either a large clean-out door, or a removable section of pipe, should be placed near the fan inlet. Explosion relief dampers and vents should be placed at strategic intervals if explosive gases are to be conveyed.

Piping Design Procedure

The engineer making an exhaust system installation will determine the total air volume which must be handled, including: air volume entering each hood, suction at each hood, volume and velocity in each length of pipe. To do this, he must consider all of the losses at hoods, fittings, elbows, etc.

Next, he will follow a procedure similar to that given below for final determination of how much motive power must be supplied:

1) Estimate the c.f.m. of air entering each hood.

2) Determine the branch pipe velocity.

3) Compute size of ducts for required velocity.

4) Determine the entrance loss of the hood types being used, at the required velocity.

5) Calculate hood suction.

He will endeavor, wherever possible, to join branch pipes, economizing of final air requirements.

Fan Selection Factors

The heart of any exhaust system is the fan which pulls the dirt-carrying air from work area to collector. Generally used are several types of centrifugal fans, as propellor type units are more adaptable for moving large volumes of air at low pressures and are better applied in general ventilation. Some are used, however, in vapor and mist exhausting systems.

Air has definite weight and density: at normal, sea-level pressure and 70 degrees F., 13 1/3 c.f. of it weigh a pound. A fan pulling 13,333 c.f.m. of clean air is actually moving a ton every second minute. It must be, therefore, a heavily constructed component of the exhaust system. Three types of centrifugal fan are in common use. They are:

Forward curved blade fan. This oldest style is the "squirrel cage" type, the multiblade forward curved blade fan. It is characterized as a slow speed fan and may have from 32 to 66 blades. It is primarily a ventilating fan for low static pressures, not a dust collecting system unit. Since its curved blades pick up and hold dirt more readily than the other types, it is not used for systems in which the dirt laden air must travel through the fan.

Paddle wheel fan. The radial blade, or paddle wheel fan is a moderate speed type, well adapted to many industrial applications. It usually has 4 to 18 straight, broad blades, with or without side plates—depending on the nature of the material to be carried in the stream. It is heavily built to stand rugged, material-handling use.

Backward curved blade fan. This high speed unit is the non-overloading type of fan, having 12 to 16 blades inclined away from the direction of rotation. It is the closest approach to a constant volume centrifugal fan: an increase in system resistance causes less capacity reduction than in the other types. Since the fan has a predetermined maximum horsepower for every speed, the system resistance will not overload the fan motor. It is not a material-handling fan.

In selecting a fan, first consideration must be given to the *volume* of air to be moved and the *resistance* to be overcome. Manufacturers provide performance sheets showing the speed (r.p.m.) and horse power necessary to meet the requirements of volume and pressure for their equipment. Keeping the air volume requirements down in the hoods and piping minimizes the horsepower needed to move it, resulting in more economical fan operation

The noise level permissible near the fan is another factor in selection. The high, steady whine of an exhaust system stems largely from the fan. As nearly all fans operate at their lowest noise level near the peak of static efficiency, choice of a fan for highest static efficiency will yield the quietest operating range. Fans selected accordingly will work near the peak of efficiency with resulting low power consumption and noise levels. Where the fan is located in front of the collector, so that solid matter must pass through it, heavier construction is needed to resist wear and abrasion.

Handling explosive or flammable matter calls for non-ferrous impellers to avoid the chance of sparking. Housings should be permanently grounded. Likewise, special rubber coatings must be applied on impellers and housings of fans handling corrosive materials.

It is usually preferable to use a belt drive, rather than direct motor connection on centrifugal fans. Belt drives make necessary speed changes easier, without resorting to variable speed motors.

For Safe Cleaning

Roebling Record

Double protection is used by this window-washer: a specially made platform plus a safety belt. The retaining bar holding the platform fits into permanent brackets at both sides of the window.

ACCIDENTS IN THE NEWS

Ottawa, Ill., Republic-Times:

Howard Eltrevoog, 26, was seriously burned about the face, arms and legs today when sparks from a machine exploded a bucket of gasoline. Eltrevoog was cleaning beneath a grease rack when the explosion, followed by fire, occurred. He was taken to Ryburn-King Hospital by Harold Jessen, another employee. Damage to the building was not extensive.

Prevention:

Lack of proper housecleaning and maintenance activity is to blame for this accident. Defective machinery plus open gasoline supply, sooner or later, always equals fire. Maintenance attention would have caught the spark thrower, housekeeping system would not have permitted gasoline to be kept in open buckets. Safety cans must be used for storage and transportation of all flammables. An eye to over-all safety organization would have seen that 1) non-flammable cleaning materials should be furnished, 2) machinery and flammable materials should be kept apart.

◆

Menominee, Mich., Herald:

Vincent Piekutowski, 63, of Perronville, was killed instantly Saturday when he was struck in the face by a board thrown from the saw at the portable mill of the Escanaba Lumber Co. He was rolling logs onto the saw carriage and was standing to the rear of the large circular blade when the accident occurred. An eight foot board caught in the saw and was thrown backward, striking Piekutowski in the face. His skull was crushed by the blow, and he died almost instantly. He had been an employee of the company since May 1.

Prevention:

Keep out from in front of and behind saw blades. In cases where the blade becomes obstructed, the saw should be shut off immediately and the impediment removed. Proper guarding will frequently prevent injuries from wood being thrown by the saw; but, in this case, the tremendous speed and force with which the large board was thrown indicate the need for proper instruction in placing workers out of the line of possible danger should such a malfunction occur.

◆

Montrose, Colorado, Press:

Condition of Leroy Bell, 26, serviceman for the Western Colorado Power Co., who was hurled to the pavement on North Nevada Avenue when the ladder on which he was standing while riding a moving truck struck a telephone line, was reported good Tuesday at St. Luke's Hospital. Bell suffered a fracture of the second lumbar vertebra and minor cuts and bruises. Power company officials were continuing their investigation of the mishap. The injured man will be placed in a cast within two or three days and will be confined for some time, according to hospital attendants.

Prevention:

Working on ladders and scaffolds calls for extra care at all times. Failure to descend from such equipment before it is moved is downright foolhardy. This man will, fortunately, not be paralyzed; but he will spend many painful weeks in a body cast, because he was too lazy to do a little extra ladder climbing. Unless scaffolds and ladders are especially designed for use in places where frequent movement is required, and are equipped with strong protective rails and belts, workers should never be permitted to ride them while in motion.

◆

Omaha, Nebr., Morning Herald:

Elmer Cowell, 48, was killed Tuesday afternoon while at work at the municipal airport: death was due to electrocution. Mr. Cowell, the chief electrician, had been working on a runway light 2,300 volt cable, not realizing that the wire was hot. His assistant, Kenneth Hulett said that the current surged through a pair of pliers and burned through a leather glove. "It held him for about four minutes, then let go. I was helpless. I didn't have a shovel to pull him clear," he related, "I gave him artificial respiration for about five minutes, but it didn't do any good. It's strange it happened to him: he was always cautious and warned us to call the tower to make sure the current was off before touching a cable."

Prevention:

Even the experienced worker can grow careless. In this case, one mistake was all it took. He taught his assistants proper precautionary measures, but didn't practice what he preached. Also, he failed to equip himself properly with lineman's rubber gloves and safety tools. The assistant might have used a jacket, or other clothing, to pull the victim free; however, in this case, it is doubtful that such an effort would have been in time.

THE BOOK SHELF

New publications to keep you up to date on safety developments. The publishers will provide further information on each.

Safety In Petroleum Refining And Related Industries, (J. G. Simmonds & Co., 111 John St., N.Y.C. 7, 1950: $10.00, 416 pp). A thorough treatment of major hazards, with special attention given correct plant lay-out and construction to prevent fire loss. Included are chapters on operational and maintenance practices affecting safety, and appendices covering flammable materials, proper tools and equipment and construction specifications.

Specifications For Rubber Insulating Line Hose (6.1), Rubber Insulator Hoods (J 6.2), Rubber Insulating Blankets (J 6.4), and Rubber Insulating Sleeves (J 6.5), (American Standards Association, 70 E. 45th St., N.Y.C., 1950: 50c ea.) New standards for rubber protective equipment used by linemen, replacing the wartime (1945) editions. One major change is an increase in tensile strength.

Model Code Of Safety Regulations For Industrial Establishments, (International Labor Office, 1825 Jefferson Place, Washington, D. C., 1950: $4.00, 483 pp). A guide for industries for use in framing or revising safety regulations. In cloth, loose-leaf binder to facilitate keeping it up to date. Material arranged under process headings index in preparation, will be sent to purchasers.

Safety Code For Manlifts, (American Society of Mechanical Engineers, 29 W. 39th St., N.Y.C. 18, 1949: 55c). Recently adopted by ASA, the new code gives specifications and drawings for construction of safe manlifts.

Industrial Toxicology, by L. T. Fairhall, (Williams & Wilkins Co., Baltimore, 1949: $6.00, 483 pp). Coverage by substance—including several new ones—showing industrial uses, characteristics, toxicity and references. An easy-to-use guide for industrial hygienists, arranged for quick reference.

Safe Handling of Radioactive Isotopes, National Bureau of Standards, Dept. of Commerce, Washington, D. C., 1949: 15c, 29 pp). A concise handbook recommending safe handling methods for laboratories and small industrial plants. Subjects include: personnel safety, lab design and equipment, hazard monitoring and isotope transportation.

Occupational Eye Diseases And Injuries, by Joseph Minton, (Grune & Stratton, Inc. 381 Fourth Ave., N.Y.C. 16, 1949: $4.50, 184 pp). Author is a British eye surgeon and lecturer on eye safety. He shows from plant experience where and how eye injuries occur, considers what can be done to prevent and treat them.

Safety Data Sheets, *Formaldehyde* (SD-1) and *Paraformaldehyde* (SD-6), (Mfg. Chemists' Association, 246 Woodward Bldg., Washington, D. C. 1950, 20c ea.) Latest revisions of rules for storage and handling of these materials.

Save TIME .... Faster production and lower labor costs.

Save AIR ..... Reduce air consumption 92 percent.

Save DIES..... No damage to dies due to clogging.

Save HANDS.. Keep operators' hands out of danger zone.

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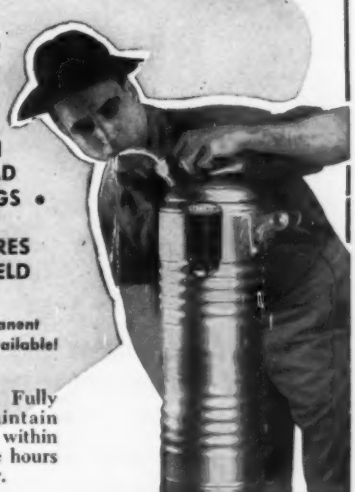
SANITARY *Portable* DRINKING FOUNTAIN *for*
CONSTRUCTION WORKERS • ROAD AND BRIDGE GANGS • MAINTENANCE CREWS • STEVEDORES MINERS • OIL FIELD WORKERS

Or Wherever a Permanent Water Supply is not Available!



Four gallon capacity. Fully insulated. Will maintain water temperature within ten degrees for twelve hours in the hottest weather.

CLEAN, COOL DRINKING WATER, ANYWHERE . . . ANYTIME

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"Those Stripes Mean SAFETY in the DARK"

Permits operators of moving equipment to see workers.

Now—

Luminescent Stripes on PLY-GARB

To the protective qualities of PLY-GARB against acids, oils, caustics, solvents and flame has been added new SAFETY for workers in dark and unlighted areas. PLY-GARB plastic-coated protective work clothes may now be ordered with luminescent glow-in-the-dark striping.

WRITE, on your letterhead, for full information and prices on Safety-Stripes for PLY-GARB. Made up on order only. Available on all PLY-GARB garments.

ASK FOR copy of our complete-line PLY-GARB Catalog of plastic-coated protective clothing.

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IMPROVED FIRST AID FOR BURNS

P-K BURN OINTMENT
PROMPT AND PROLONGED RELIEF FOR
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SUPPLIED IN 1/8 OZ., 1/2 OZ., — 4 OZ. TUBES

PAC-KIT REFILL UNITS
P404-A P-K BURN OINTMENT, SIX 1/8 OZ. TUBES PER UNIT
P404 P-K BURN OINTMENT, TWO 1/2 OZ. TUBES PER UNIT

FIRE, STEAM AND FRICTION BURNS
ELECTRICAL AND WELDING BURNS
SCALDS — SUNBURN — WINDBURN

P-K BURN OINTMENT provides immediate and sustained relief. It is a soft Lanoline base cream with an effective analgesic. Liberal free sample supplied on request.

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EXTINGUISHER MAINTENANCE

continued from page 12

Many of the same instructions for the soda-acid extinguishers apply to the pump type. Extinguishers should be washed out with clear water, the shell examined both internally and externally for damage or corrosion, and the pump tried out for proper operation. The pump should have a little light oil applied to the working parts. After determining that all of the operating parts are in proper working condition, the extinguisher should be filled to the proper level with clean water. If it is to be placed at a location where freezing may occur the calcium-chloride solution should be used, making sure that this solution contains an anti-corrosive agent.

Foam-Type Extinguisher

The foam type fire extinguisher is especially recommended for fires involving flammable liquids. It is approved for use on fires involving ordinary combustible material, but *not* for use on fires involving live electrical equipment. It should be kept in a non-freezing location and recharged annually.

The soda-acid and the foam type extinguishers are very much alike in appearance and operation. There are a few important differences. The foam type extinguisher discharges a relatively large amount of dense foam capable of clinging to a burning object or floating on the surface of a burning liquid. Again, it is important that the recharging be followed carefully. All recommendations made regarding the recharging and inspection of soda-acid extinguishers apply to foam extinguishers. However, wherever "acid bottle and stopple" are mentioned under soda-acid, simply substitute "inner cylinder and stopple" and follow the directions on recharge packages.

Vaporizing Liquid Extinguisher

The vaporizing liquid pump type fire extinguisher is an efficient weapon for fighting flammable liquid and electrical fires. Once a year it should be partially discharged into a clean, dry glass receptacle so as to test operation of the pump and nozzle opening. The liquid then can be returned to the extinguisher. The liquid is non-deteriorating and a non-conductor of electricity. The fire extinguisher should be kept full to within one-half inch of the filler opening at all times. The filler cap must be screwed on tightly.

Commercial carbon tetrachloride should not be used for recharging vaporizing liquid type of fire extinguishers, as the commercial grade generally sold may contain impurities which are likely to cause harm to the device. Furthermore, its freezing point may be higher than climatic temperatures often encountered. Water should never be brought into contact with the vaporizing liquid extinguishing agent. Although there may be no direct or immediate reaction between the water and the vaporizing liquid, hydrolysis does take place over a period of time with the formation of hydrochloric acid. This acid can cause serious corrosion of the working parts of the extinguisher. For the same reason all such devices should be kept filled with extinguisher fluid because a partly filled unit may absorb moisture.

Carbon Dioxide Extinguisher

The carbon dioxide fire extinguisher is particularly suited for fighting fires involving flammable liquids, solids, and electrical equipment. It discharges a cold white cloud of carbon dioxide which displaces the oxygen in the air and thereby smothers the fire. The gas does not damage machinery, materials or finishes. While it is not necessary to recharge carbon dioxide fire extinguishers periodically, their weight should be checked semi-annually in order to detect leakage or accidental discharge. It is vitally

Safety Equipment Room

Handily accessible to workers at shift changes, B. F. Goodrich Chemical Co.'s new safety equipment room stores shoes, goggles, respirators, protective creams and other items likely to be needed on short notice. Equipment is sterilized in the sink, sealed in glassine envelopes and returned to shelves after use.

important that the manufacturer's weight specifications, stamped on the carbon dioxide extinguishers be adhered to strictly.

A carbon dioxide extinguisher need not be recharged if it shows a net loss of weight not exceeding 10 per cent, since the contents do not deteriorate with age. *The extinguisher should be recharged immediately after use*, even though it has been only partially discharged.

Loaded Stream Extinguisher

Loaded stream fire extinguishers also require annual inspection to detect deterioration or damage. These extinguishers, utilizing a water-based liquid expelled by carbon dioxide, should be recharged immediately after use. It is important that defective devices be taken out of service and repair or discarded. The extinguisher should be kept filled. During inspection, the carbon dioxide cylinder used to expel the liquid should be removed and weighed to detect any loss of contents. A loss of ½ ounce or more from the original weight means that the cartridge should be replaced. This applies to extinguishers up to 2½ gallon. In the larger units, a loss not exceeding 1 ounce is permissible.

At suitable intervals it is advisable to hydrostatically test soda-acid foam, and loaded stream extinguishers. This retesting is advisable because the strength of the extinguisher shell may gradually deteriorate with age, and it is possible that a weakened extinguisher could fail at the time of use with serious consequences to the person manipulating it. This test interval could be every five years, although the length of time between such tests will depend in part on the conditions in the particular plant.

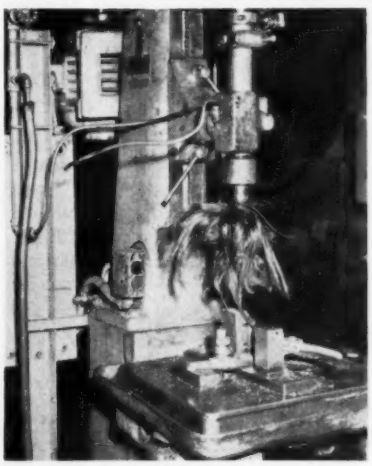
In carrying out the hydrostatic testing extreme care should be used to see that no air remains in the extinguisher; because if an extinguisher fails under testing, with air in it, it may rupture with violence and cause injury or death to persons nearby.

Dry Chemical Extinguisher

The approved dry chemical extinguisher is also suited for the fighting of fires involving flammable liquids, solids, and electrical equipment. The dry chemical extinguisher should be kept filled with the specified weight of chemical. It should be refilled immediately after use, even though only partially discharged. Before recharging, the hose or nozzle should be cleared of all chemicals. A carbon dioxide cartridge provides the source of the expelling force in the smaller dry chemical units. A nitrogen cylinder usually provides the propellant for the larger dry chemical units.

In the case of the smaller dry chemical units a loss of ½ ounce for the 15 pound extinguisher, and a loss of 1 ounce for the 25 pound extinguisher, calls for cartridge replacement. In the case of the nitrogen powered large dry chemical units, the gauge should show 1500 pounds pressure. The nitrogen cylder should be replaced if the gauge shows less than 1500 pounds pressure.

Compound refills should be kept sealed, and in recharging care should be taken that the compound does not become contaminated by foreign matter. Only the compound and cartridges furnished by the manufacturer should be used for recharging. Water should not be used for any purpose in these extinguishers. At least once a year dry chemical extinguishers and all their parts (including gaskets and hose) should be examined for deterioration or damage.



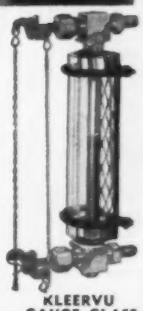
Expensive Vanity

LONG flowing locks, out of style on Fifth Avenue this year, are always in poor taste when working on machinery. The young lady who ignored fashion and safe practice dictates in an Ohio plant suffered a painful disfigurement, as indicated by the photo.

Long, or short, women's hair should be bound up tightly in order to prevent such occurrences. Hair nets are not sufficient protection, as even a few straggly ends can still catch in high speed machinery. A bandanna or kerchief, which covers the hair completely, is the only safe head coverage.

According to the Industrial Commission of Ohio, which recorded this accident in its monthly bulletin, *The Monitor*, both workers and safety managers must exercise greater caution to assure safe head-dress among women workers.

—and a charge of sharp, broken glass flies through space to injure, perhaps blind, or even kill. You can prevent such accidents by installing Kleervu Safety Gauge Glass Protectors — a transparent, shatter-proof shield which surrounds the gauge glass, keeps exploded broken glass confined. Any length 4" to 8'. Install in two minutes. For Chemical tank and Water column gauges.



KLEERVU GAUGE GLASS PROTECTOR

Literature and prices on request.

WRIGHT AUSTIN COMPANY
Established Over 50 Years
3247 Wight St. Detroit 7, Michigan

QUIK-LABEL Pipe Markers conform to American Standards Association Pipe Identification System. QUIK-LABELS come on handy cards . . . stick without moistening. Names of materials printed in large black letters on correct ASA background colors. CAN BE READ UP TO 75 FEET. Markers for over 140 materials, **including all materials listed in ASA Standard A13,** available on Brady Stock Cards. Specials made to your order. QUIK-LABEL Pipe Markers are Silicone Plastic coated to resist dirt, grease, fumes, moisture . . . indoors or out. Replace slow and costly painting and hand stenciling. Exclusive Starter-Strip automatically releases part of label for fast peeling. QUIK-LABELS mark your pipes so that anyone who can read will know what's in them. **QUIK-LABELS leave no room for doubt . . . or tragedy.** Write for useful literature and FREE SAMPLES today.

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INDUSTRY NEWS

Bullard Promotes Two

Two recent promotions in the E. D. Bullard Company put **George R. Huffman** in the Advertising Manager's chair and **E. W. Bullard, Jr.,** in the Assistant to Vice-President In Charge of Sales spot. Both men have their headquarters in the firm's San Francisco office.

Minors' Work To Be Restricted

Workers under 18 will not be permitted to operate certain power-driven metalworking machines cited as hazardous in a new order proposed recently by the **U. S. Department of Labor.** Machines declared hazardous in the proposed regulation included rolls for bending or reducing thickness of metal, punching and pressing machines, power and drop hammers and metal cutting shears.

Allis-Chalmers Appoints

John E. Miller, since 1946 assistant supervisor of the safety department at Allis Chalmers Norwood Works, has been named supervisor of the department, according to a recent announcement. Miller was in charge of veteran counselling in the company's personnel department before his assignment to the safety department.

Albertson Joins Mione

H. R. Albertson, former district sales manager of Armour & Company's Industrial Soap Division in Philadelphia, has joined the Mione Manufacturing Company.

Equipment Data Wanted

Gray Iron Founders' Society, Inc., is gathering information on foundry equipment designed to cut accident rates, which will be used to form reference file of available equipment, for use by foundry management executives. The Society invites any manufacturer of equipment or devices having foundry applications to submit full data on his product to Society headquarters at 210 National City—East Sixth Street Building, Cleveland 14, Ohio.

Heads Gas Group's Safety Committee

W. H. Adams, Safety director of the Manufacturers Light and Heat Company and associated Pittsburgh Group companies in the Columbia Gas System, has been appointed chairman of the Accident Prevention Committee of the American Gas Association. Mr. Adams will complete the unexpired term of Paul Hasskarl, who died recently.

Wyandotte Names Lilly

Wyandotte Chemicals Corporation has announced the appointment of **Merton B. Lilly** as head of its patent department. Lilly has been working with an independent patent law firm most recently, before that was with the Battelle Memorial Institute. He succeeds William R. Day at Wyandotte: Mr. Day has been made assistant to the president of the company.

Appointed Scott S. M.

The appointment of **L. E. Jordan** as General Sales Manager of Scott Aviation Corporation was announced recently by company president Earle M. Scott. Mr. Jordan will head all sales activities in the firm's aviation, safety and medical markets. He comes to Scott from the Melvin F. Hall Company.

Erratum

Our directory of manufacturers of fire extinguishers in the June issue erroneously excluded Ansul Chemical Company as a manufacturer of Dry Chemical extinguishers. Ansul, pioneer maker of dry chemical extinguishers, is still going strong, of course. In the same directory, the U. S. Rubber company's address was given as 120 Avenue of the Americas—it should have read 1230.

Another omission: The Reliable Automatic Sprinkler Co. Inc., manufacturers of automatic sprinklers, located at 72-78 Bronx St., in Mt. Vernon, N. Y., was inadvertently omitted from the directory.

WHEN THE FIRE IS OUT

continued from page 18

Augers tend to stick in holes when water swells the wood, and they often strike nails which prevent the blades from cutting. A neatly chopped, small hole provides better facilities for draining and costs little more to repair. When small quantities of water collect in floor pockets, they should be scooped with shovels into buckets or tubs and removed.

When a building is being heavily deluged with water, holes should be cut as soon as possible to relieve the floors of weight. This action is particularly advantageous when paper, rags, broom corn and similar types of materials are concerned as such stocks absorb water and cause excessive expansion and weight strains upon the structural members of buildings.

Thwart Looting

Many persons are under the impression that insurance companies reimburse owners for all loss of property at fires. As a result of this thinking, exposed property becomes a temptation to many who would never think of stealing under other circumstances. Unless special efforts are made to guard fire premises, looting is one of the ever-present problems with which plants must cope. Maintenance crews and firemen should further protect against the loss of valuables by careful examination during overhauling processes, and as previously stated, should avoid removing any burned material from the premises except burned structural members that would impede efficient overhauling. Such care might unearth supposedly lost articles from the debris. At the same time it would help eliminate unsightly rubbish on the outside of the building which could be blown or carried around the neighborhood thus creating an added nuisance which is something to be avoided.

After water has been drained from a building, the floors must be dried as soon as possible to prevent warping. While brooms are efficient in sweeping large amounts of water, they leave considerable moisture on the floors and it has been found that squeegees serve the purpose much better. The best type of squeegee has a metal top which assists in pushing large amounts of water. When the squeegee is turned over it can be used as a scraper. The scraper is particularly well adapted to removing water from carpeted floors before they are removed for drying.

Absorbent sweeping compounds should be used for drying or absorbing moisture under machinery and other places where it is impossible to use a squeegee. These materials may also be used effectively in building dikes to prevent the spread of water and channels to conduct water from one part of the floor to a drainage point.

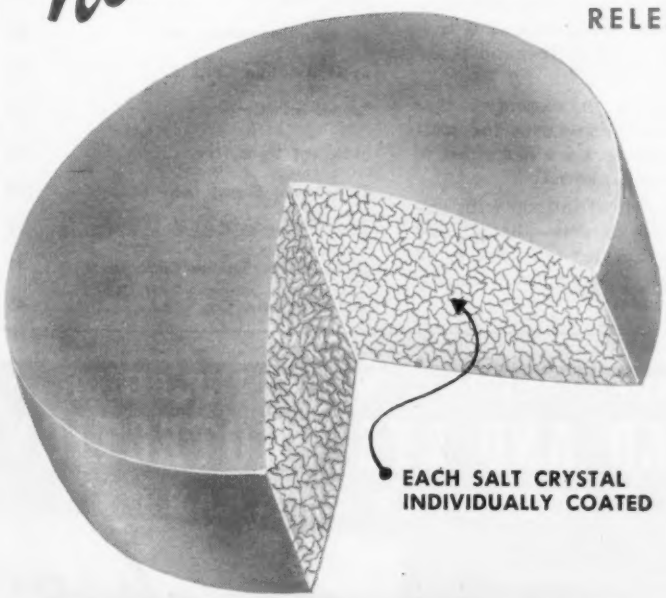
Basement Drainage

Basement drainage is a much more difficult problem and large losses frequently occur from lack of ample and unobstructed drainage facilities. When heavy streams have been in use, not only the stock and conditions in the basement of the buildings on fire, should be considered, but also the conditions in adjoining basements.

Men should be sent immediately to the basement to see that the floor drains are unobstructed and that all stock is removed from the floor. If the building is equipped with sump pumps, the equipment should be examined to see that it is functioning properly. When the floor drains prove inadequate or are obstructed, soil pipes leading from roof drains

New! "PEP-UP" IMPREGNATED SALT TABLETS

RELEASES SALT IMMEDIATELY
(Not Enteric Coated)



- No delay in getting salt into system
- Starts dissolving immediately
- Dissolves completely in about 100 minutes
- Controlled dissolving eliminates nausea
- Withstands rough handling and storage without deterioration
- Meets Government Specification No. SS-S-31C.

Write for literature and prices

THE PACKAGE IS THE DISPENSER

"PEP-UP" Impregnated Salt Tablets come to you in sanitary, factory-sealed Dispensers at no extra cost. THROW AWAY DISPENSER WHEN EMPTY HANG UP A NEW ONE Save the expense of purchasing, servicing and replacing individual dispensers.

UNITED STATES SAFETY SERVICE CO.
KANSAS CITY 6, MO. · BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

and upper floor plumbing can be broken very often at the floor level to aid in draining basements. Toilet bowls pried from the floors leave openings which also serve the same purpose but with increased capacity.

If these methods are not effective the stock should be skidded as high as possible and pumps placed for suction from the basement, or syphons should be used to keep the water at as low a level as possible. In the case of adjoining basements, it is often possible to salvage much of the stock by removing it to upper floors. Salvage by this method necessarily depends upon the type of merchandise and furnishings present, together with the availability of elevators, house trucks and manpower. The procedure of moving a large stock of small articles on shelves is extremely difficult because of the time required to handle such merchandise. Under these circumstances it is best to move the stock from the lower shelves to the upper shelves and make every possible effort to maintain a low water level.

We have had many disastrous building collapses after fires were under control which were caused by the expansion of contents, water loads and by weakened structural supports caused by partial burning. Every possible precaution must be taken to guard men working in and around such structures.

Ladders and other equipment should be removed from the scene as quickly and carefully as possible. This is particularly important when freezing conditions create special hazards, and where damage can easily result through negligent or careless handling. Icy streets and sidewalks should be sanded or salted as an extra precaution to prevent injuries to firemen and citizens as well. It is also important to check and have removed any broken glass in windows, hanging cornices or any other heavy material that may fall from above. Holes in sidewalks and floors, open elevator shafts and other such hazardous openings should be carefully boarded up or protected in other ways to prevent injuries.

LITERATURE FEATURED IN ADS

(Continued from page 36)

A-18 . . . The B. F. McDonald Company offers a bulletin describing its new Reversalarm truck backup warning that protects workers from backing vehicles.

A-19 . . . Bausch & Lomb's poster and pamphlet campaigns to sell workers on eye safety are part of their eye protection service. Latest literature describes these campaigns, shows how you can use them.

A-20 . . . A free sample of P-K burn ointment, the soft lanoline base cream containing an analgesic to relieve the pain of burns and scalds, is offered by The Pac-Kit Company.

A-21 . . . Quik-Labels, made by W. H. Brady Company, are continuous strip pipe markers, with adhesive backs for easy sticking. Free samples are offered by Brady.

A-22 . . . Surety Rubber Company shows, in its latest booklets on the subject, why Sureseal synthetic rubber industrial gloves are safe, long wearing—and economical.

A-23 . . . Scott Aviation Corporation tells how you can protect your safety record with their demand type inhalator or Air-Pak, in newest catalogs offered by the firm's medical division.

A-24 . . . Exploding gauge glass has been the cause of thousands of accidents have injured and sometimes blinded workers. Wright-Austin Company makes shields to cover the glass, confine shattered particles. Their literature describes and illustrates the shields.

A-25 . . . Detex Watchclock Corporation points out, in its just-published booklet on plant protection, that the cost of their tape-recording mechanism for watchmen is a trifling price to pay for weekend peace of mind.

A-26 . . . Recent developments that have uncovered new uses for wet-type dust collectors are described in Peters-Dalton bulletins.

A-27 . . . Beat heat fatigue with impregnated salt tablets—that's what U. S. Safety Service tells you to do in its newest booklet, free for the asking to readers.

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SPECIALIZING IN "BETTER-BUILT"

HEAD AND EYE PROTECTION

FOR OVER 25 YEARS

There is a DOCKSON distributor near you. Name on request. Write for our complete safety equipment catalog.

Dockson CORPORATION

3839 WABASH • DETROIT 8, MICH.

1 SELL EYE SAFETY TO EMPLOYEES
Ask your distributor's representative to show you the kit of posters, pay envelope inserts, PA system scripts and other material that sells workers forcefully on *desire to use* proper safety eyewear.

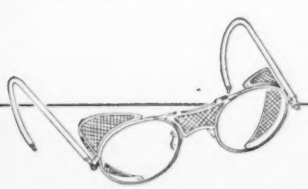
2 SAFETY GLASSES FOR EACH JOB
A complete range of Bausch & Lomb safety eyewear, engineered to meet the most rigid tests for each job classification in your plant.

3 PROTECTION *PLUS* CORRECTION
For at least 50% of your workers prescription lenses are necessary to working efficiency as well as to safety. Your B&L distributor offers prompt prescription service on all types of industrial eyewear.

RIDICULOUS, isn't it? If eye accidents could be abolished with no more than a front office edict, industry would long ago have attained perfect safety records.

Experts have long agreed that the only *total* eye safety program includes education of workers.

Let us show you the dramatic series of posters, pamphlets and other material that is an all-important part of Bausch & Lomb's *total* eye safety service. Write Bausch & Lomb Optical Co., 745-S St. Paul St., Rochester 2, N. Y.



BAUSCH & LOMB
Safety Eyewear

The dress that needn't have been so beautiful

THERE'S NO REAL REASON for a girl to have the most beautiful dress in the world. Even my daughter Sally. Even if she has her heart set on it.

But—I bought it. And when I paid the bill, I whistled! Partly with the well-known father's bill-shock. Partly for happiness. Because, Sally was right—there never *was* a prettier dress to get married in.

It's times like that—when we can buy something really important even if it is a luxury—that I feel like such a lucky guy.

And times like when my wife got sick, and we could give her the good care she needed to get well. And the swell day-in, day-out feeling of *knowing* that if an emergency comes, you've got the money to meet it.

I know the luckiest day of my life was when I signed up to save regularly through the Payroll Savings Plan at the office. I'd tried every which way to save before, but, brother, this *automatic* way is the only way that *works—for you—all the time!*

Buying U. S. Savings Bonds . . . whether by the Payroll Savings Plan or the Bond-A-Month Plan . . . is the safest, "foolproofest," easiest method of saving since money was invented. And every $3 you invest will turn into $4 in just 10 years.

Automatic saving is sure saving—
U.S. Savings Bonds

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